

ARTICLE XV.—REPORT ON THE FORAMINIFERA FROM THE SUB-ANTARCTIC ISLANDS OF NEW ZEALAND.

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PLATES XIII, XIV, XV, XVI, AND XVII.

THE first portion of the present material was received from Mr. J. B. Mayne, M.A., of Christchurch, New Zealand, who favoured me with three samples of dredgings collected during the recent Subantarctic Expedition from various stations to the south of New Zealand. One of these samples gave promise of good results in the group of the *Foraminifera*. Shortly afterwards I was requested by Drs. C. C. Farr and C. Chilton, of the Philosophical Institute of Canterbury, to undertake the systematic description of the foraminiferal material dredged by the members of the same expedition, and, upon acceding to their request, Dr. Chilton kindly supplied me with several samples from other localities.

DETAILS OF SAMPLES.

(1.) “Perseverance Harbour, Campbell Islands; 8 fathoms. Bollons.” (Suter.)
A fine silty deposit, largely terrigenous. Containing numerous sponge-spicules and minute calcareous-tested *Foraminifera*, together with a few arenaceous forms.

(2.) “One mile and a half north-east of Bounty Island; 50 fathoms. Bollons.” (Suter.)

A coarse shelly deposit, consisting largely of calcareous worm-tubes, *Polyzoa*, barnacles, and *Mollusca*. A few specimens of *Foraminifera* present, including some interesting redundant or fistulose forms of *Polymorphina*.

(3.) “No. 2. Off the Snares; 60 fathoms.” (Mayne.)

Foraminiferal and shell sand, with *Polyzoa*, *Ostracoda*, and siliceous sponge-spicules. Also numerous crystals of garnet (rhombic dodecahedra) with striated surfaces. A very rich foraminiferal fauna.

(4.) “No. 1. Twenty miles north of Auckland Island; 85 fathoms.” (Mayne.)
Shell sand with *Polyzoa* and *Ostracoda*. Rich in *Foraminifera*.

(5.) “Ten miles north of Enderby Island; 85 fathoms.” (Waite.)

Shell sand with *Polyzoa* and *Ostracoda*. *Foraminifera* very abundant. The families *Miliolidae* and *Lagenidae* both well represented.

DESCRIPTION OF THE FORAMINIFERA.

Fam. MILIOLIDAE.

Subfam. NUBECULARIINAE.

Genus NUBECULARIA, DeFrance, 1825.

Nubecularia lucifuga, DeFrance.

Nubecularia lucifuga, DeFrance, 1825, Dict. Sci. Nat., vol. xxv, p. 210; Atlas Zooph., pl. xlv, fig. 3. *N. lucifuga*, DeFr., Brady, 1884, Rep. Chall., vol. ix, p. 134, pl. i, figs. 9-16. *N. lucifuga*, DeFr., Egger, 1893, Abhandl. d. k. bayer. Akad. d. Wiss., cl. ii, vol. xviii, p. 250, pl. xxi, figs. 4-7. *N. lucifuga*, DeFr., Millett, 1898, Journ. R. Micr. Soc., p. 261, pl. v, fig. 7.

The example found here almost exactly resembles fig. 3 of the "Challenger" Report, and is of the adherent and spiral type of shell. The attached surface shows very imperfect septation; the upper surface is rugose and pitted.

Distribution.—*N. lucifuga* has been previously recorded (as a variety) from the New Zealand area by Dr. Rudolf Haeusler,* who found it in shallow water at the Hauraki Gulf. The "Challenger" obtained it from one station only, at Tongatabu, Friendly Islands (18 fathoms). It has also been recorded from the shore-sands near Melbourne, Australia, and from the coast of Tripoli; whilst it is abundant on the shores of the Mediterranean (as at Palermo, Sicily, T. Rupt. Jones coll. in the author's cabinet), and in the East and West Indies. Depauperated examples occasionally turn up on the Devonshire coast, in England. Dr. Egger has also recorded it from the neighbourhood of Kerguelen Island, and Mr. Millett from the Malay Archipelago.

Present Occurrence.—Off the Snares; 60 fathoms; one specimen.

Subfam. MILIOLININAE.

Genus BILOCULINA, d'Orbigny, 1826.

Biloculina depressa, d'Orbigny.

Biloculina depressa, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 298, No. 7. *B. depressa*, d'Orb., Brady, 1884, Rep. Chall., vol. ix, p. 145, pl. ii, figs. 12, 16, 17; pl. iii, figs. 1, 2. *B. depressa*, d'Orb., Schlumberger, 1891, Mém. Soc. Zool. France, vol. iv, p. 547, pl. ix, figs. 48, 49; woodcuts, figs. 1-5.

A few of our shells exhibit the aboral prolongation which is seen to occur in Recent examples, and so frequently in the Tertiary specimens from Victoria and elsewhere. The deep-water variety, *murrhyna*, appears to be absent from these soundings.

* Trans. N.Z., Inst. vol. xix, 1887, p. 197.

Distribution.—This species has a wide geographical range. The “Challenger” obtained it from the New Zealand area.

Present Occurrence.—Off the Snares; 60 fathoms; common. Twenty miles north of Auckland Island; 85 fathoms; very common. Ten miles north of Enderby Island; 85 fathoms; very common.

Biloculina serrata, Brady.

Biloculina depressa, d'Orbigny, var. *serrata*, Brady, 1884, Rep. Chall., vol. ix, p. 146, pl. ii, figs. 3 a-c. *B. serrata*, Brady, Schlumberger, 1891, Mém. Soc. Zool., France, vol. iv, p. 550, pl. ix, figs. 50, 51; woodcuts, 6, 7. *B. serrata*, Brady, Goës, 1894, Kongl. Svenska Vetenskaps-Akad. Handl., vol. xxv, No. 9, p. 120, pl. xxv, fig. 926.

Our specimens are not so uniformly serrated as Brady's figured example, but they are undoubtedly referable to that form. They more nearly resemble the figures given by Dr. Goës.

Distribution.—This species, curiously, in common with other types here enumerated, occurs at antipodean areas. Brady's examples came from the North Atlantic and South Pacific, and it is recorded from the New Zealand area in the “Challenger's” “Summary of Results.” Schlumberger obtained it from the Gulf of Gascony.

Present Occurrence.—Off the Snares; 60 fathoms; rare.

Biloculina sarsi, Schlumberger. (Plate XIII, fig. 3.)

Biloculina ringens, Brady (non Lamarck), 1884, Rep. Chall., vol. ix, p. 139. *B. sarsi*, Schlumberger, 1891, Mém. Soc. Zool. France, vol. iv, p. 553, pl. ix, figs. 55-59; woodcuts, 10-12. *B. sarsi*, Schlumb., Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 14, pl. i, figs. 1, 2.

Distribution.—The original specimens were dredged by M. Sars in the North Sea. This species has already been described from the Tertiary (Balcombian) clays of Port Phillip, where they attained especially large dimensions.

Present Occurrence.—Off the Snares; 60 fathoms; common. Twenty miles north of Auckland Island; 85 fathoms; frequent; small examples. Ten miles north of Enderby Island; 85 fathoms; rare.

Biloculina bradii, Schlumberger. (Plate XIII, fig. 1.)

Biloculina ringens, Brady (non Lamarck), 1884, Rep. Chall., vol. ix, p. 142, pl. ii, fig. 7. *B. bradyi*, Schlumberger, 1891, Mém. Soc. Zool. France, vol. iv, p. 557, pl. x, figs. 63-71; woodcuts, 15-19. *B. bradii*, Schlumb., Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 13, pl. i, figs. 7, 8.

A good series of this form was found, and the examples are fairly typical. Schlumberger distinguishes the Eocene *B. ringens* from the living species by the aperture and relative thickness of the walls.

Distribution.—Should Dr. Brady's records of *B. ringens* prove to be referable to the above form, the living representatives are cosmopolitan. Schlumberger records *B. bradii* from the Atlantic (Gulf of Gascony; 1,850 metres). The writer has also recorded this form from the Tertiary (Balcombian) clays of Port Phillip.

Present Occurrence.—Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; frequent.

Biloculina bradii, Schlumberger, var. ***denticulata***, Brady. (Plate XIII, fig. 2.)

Biloculina ringens, Lam., var. *denticulata*, Brady, 1884, Rep. Chall., vol. ix, p. 143, pl. iii, figs. 4, 5.

Our figured specimen shows strong denticulations along the lateral edges, but not so well marked at the aboral end as in Brady's example.

Distribution.—Dr. Brady regarded this variety as belonging essentially to the coral-reef fauna. It occurred in the "Challenger" dredgings at several stations in the Pacific.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very rare.

Biloculina vespertilio, Schlumberger. (Plate XIII, figs. 4 *a*, *b*.)

Biloculina ringens, Brady (non Lamarck), 1884, Rep. Chall., vol. ix, p. 142, pl. ii, fig. 8. *B. vespertilio*, Schlumberger, 1891, Mém. Soc. Zool. France, vol. iv, p. 561, pl. x, figs. 74–76; woodcuts, 20–22.

Distribution.—Gulf of Gascony; 1,850 metres (Schlumberger).

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

Biloculina pisum, Schlumberger.

Biloculina pisum, Schlumberger, 1891, Mém. Soc. Zool. France, vol. iv, p. 569, pl. xi, figs. 81–83; woodcut, 31. *B. pisum*, Schlum., Chapman, 1905, Trans. N.Z. Inst., vol. xxxviii, p. 80.

Distribution.—The original specimens were dredged in the Mediterranean. The writer has already noted this species from Great Barrier Island, New Zealand, at 110 fathoms, and it was moderately abundant.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; rare.

Biloculina lucernula, Schwager.

Biloculina lucernula, Schwager, 1866, "Novara" Exped., geol. Thiel, vol. ii, p. 202, pl. iv, figs. 17 *a*, *b*. *B. bulloides*, Brady (non d'Orbigny), 1884, Rep. Chall., vol. ix, p. 142, pl. ii, figs. 5, 6. *B. lucernula*, Schwager, Schlumberger, 1891, Mém. Soc. Géol. France, vol. iv, p. 572, pl. xii, figs. 90–96; woodcuts, 37–41.

Distribution.—This is a common form in the North Atlantic, and is only occasionally found in the Southern Hemisphere.

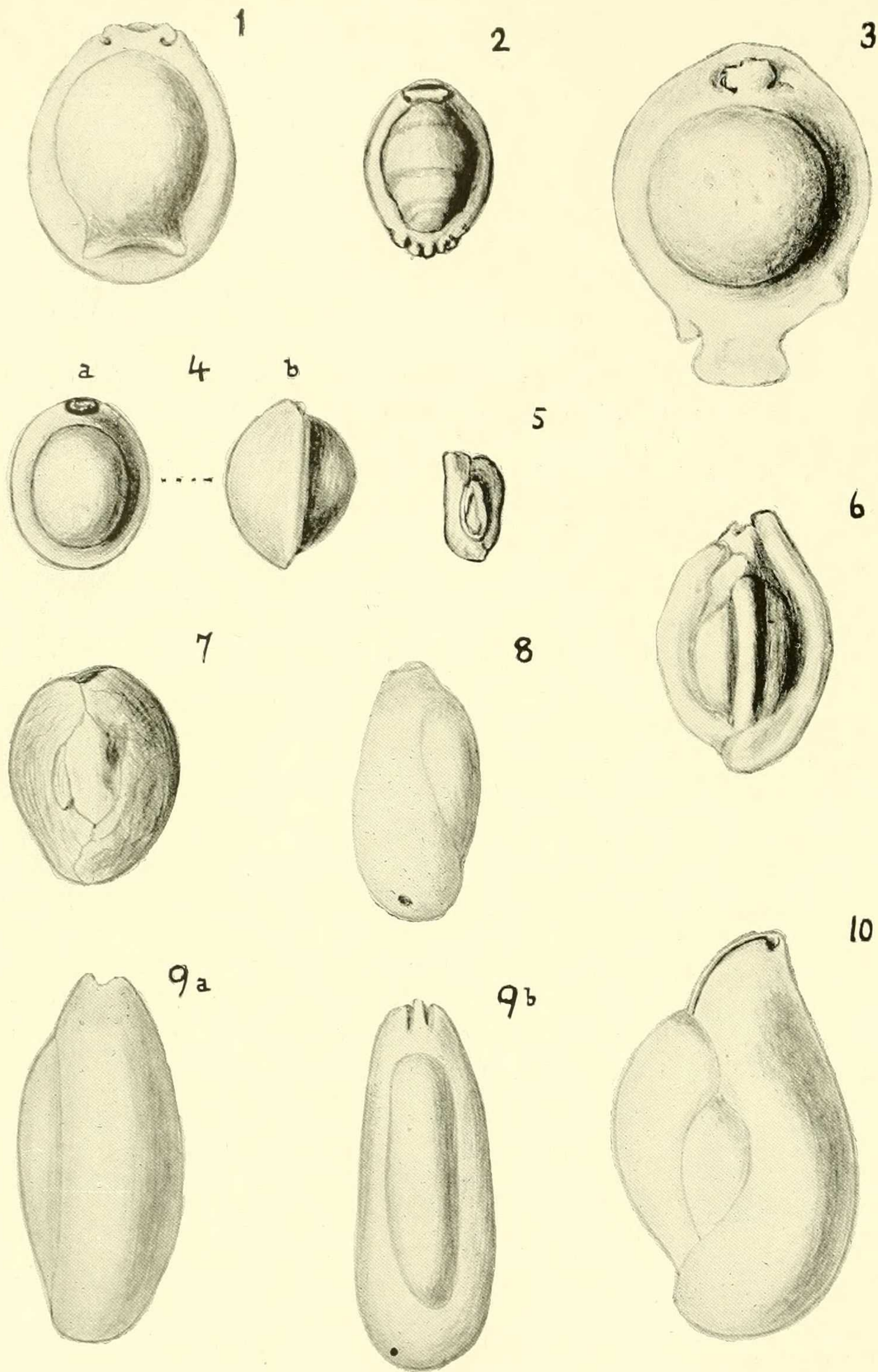


PLATE XIII.

X 36.

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

***Biloculina elongata*, d'Orbigny.**

Biloculina elongata, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 298, No. 4.
B. elongata, d'Orb., Brady, 1884, Rep. Chall., vol. ix, p. 144, pl. ii, figs. 9 a, b. *B. elongata*, d'Orb., Howchin, 1889, Trans. R. Soc. S. Australia, vol. xii, p. i. *B. elongata*, d'Orb., Schlumberger, 1891, Mém. Soc. Zool. France, vol. iv, p. 571, pls. xi and xii, figs. 87-89; woodcuts, 35, 36. *B. elongata*, d'Orb., Millett, 1898, Journ. R. Micr. Soc., p. 263. *B. elongata*, d'Orb., Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 15, pl. i, fig. 14.

Distribution.—This species has a wide geographical range. Dr. Brady remarks that it is most abundant in the North Atlantic and South Pacific. Mr. Millett records it from the Malay Archipelago. Mr. Howchin and the writer obtained it as a fossil from the Victorian Tertiaries.

Present Occurrence.—Off the Snares; 60 fathoms; very rare.

***Biloculina irregularis*, d'Orbigny.**

Biloculina irregularis, d'Orbigny, 1839, Foram. Amér. Mérid., p. 67, pl. viii, figs. 22-24. *B. irregularis*, d'Orb., Brady, 1884, Rep. Chall., vol. ix, p. 140, pl. i, figs. 17, 18. *B. irregularis*, d'Orb., Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, abth. ii, p. 216, pl. i, figs. 13-15. *B. irregularis*, d'Orb., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 295, pl. xli, fig. 3. *B. irregularis*, d'Orb., Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 15, pl. i, figs. 5, 6.

Our specimens are small, but otherwise typical.

Distribution.—The "Challenger" obtained examples from the New Zealand area, as well as from the Canaries (off Palma), 1,125 fathoms; off Sombbrero Island, 450 fathoms; south of Pernambuco, 350 fathoms; South Atlantic, 1,415 fathoms; off Fiji, 610 fathoms; off Tahiti, 620 fathoms; and north of Papua, 1,070 fathoms. Dr. Egger obtained it from "Gazelle" material off Kerguelen, 104 metres, and off the Western Australian coast, 359 metres.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very common.

***Biloculina globulus*, Bornemann.**

Biloculina globulus, Bornemann, 1855, Zeitscher. d. deutsch. geol. Gesellsch., vol. vii, p. 349, pl. xix, fig. 3. *B. globulus*, Born., Schlumberger, 1891, Mém. Soc. Zool. France, vol. iv, p. 575, pl. xii, figs. 97-100; woodcuts, 42-44. *B. globulus*, Born., Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 15, pl. i, figs. 17, 18.

Distribution.—In the "Challenger" Report Dr. H. B. Brady unites this species, unfortunately, with *Planispirina* ("*Biloculina*") *sphaera*, so that we cannot follow

the distribution as it there stands. Schlumberger records it from the Atlantic (Azores). It is of frequent occurrence in the Victorian Tertiary clays of Balcombian age; and Bornemann and Reuss have indicated its general distribution in the Oligocene clays of Germany.

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Twenty miles north of Auckland Island; 85 fathoms; rare; small. Ten miles north of Enderby Island; 85 fathoms; common.

Genus SPIROLOCULINA, d'Orbigny, 1826.

Spiroloculina asperula, Karrer.

Spiroloculina asperula, Karrer, 1868, Sitzungsber. d. k. Ak. Wiss. Wien, vol. lvii, p. 136, pl. i, fig. 10. *S. asperula*, Karrer, Brady, 1884, Rep. Chall., vol. ix, p. 152, pl. viii, figs. ? 11, 13, 14. *S. asperula*, Karrer, Egger, 1893, Abhandl. d. k. bay. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 225, pl. i, figs. 30–32; pl. xi, figs. 57, 58.

Distribution.—The “Challenger” localities are in the Pacific and the West Indies. Egger obtained it from the “Gazelle” soundings, off west Africa, the Mauritius, and Western Australia.

Present Occurrence.—Off the Snares; 60 fathoms; one example, slightly damaged.

Genus MILIOLINA, Williamson, 1858.

Miliolina insignis, Brady.

Miliolina insignis, Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi, n.s., p. 45. *M. insignis*, Brady, 1884, Rep. Chall., vol. ix, p. 165, pl. iv, figs. 8, 10. *M. insignis*, Brady, Chapman, 1906, Trans. N.Z. Inst., vol. xxxviii, p. 81.

Distribution.—This species has already been recorded, by the writer, from the New Zealand area, off Great Barrier Island, at 110 fathoms. It is a rather widely distributed form, and occurs in shallow water and down to 2,900 fathoms.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; one large example.

Miliolina circularis, Bornemann sp.

Triloculina circularis, Bornemann, 1855, Zeitschr. d. deutsch. Gesellsch., vol. vii, p. 349, pl. xix, fig. 4. *Miliolina circularis*, Born. sp., Brady, 1884, Rep. Chall., vol. ix, p. 169, pl. iv, figs. 3 a–c; pl. v, figs. 13, 14(?). *M. circularis*, Born. sp., Egger, 1893, Abhandl. d. k. bay. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 235, pl. ii, figs. 61–63. *M. circularis*, Born. sp., Millett, 1898, Journ. R. Micr. Soc., p. 499, pl. xi, figs. 1–3. *M. circularis*, Born. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 298, pl. xlv, fig. 1.

Distribution.—Originally described as a fossil from the Oligocene of Hermsdorf, this species has been recorded in recent deposits off Prince Edward Island, 50–150

fathoms; off Christmas Harbour, Kerguelen Island, 120 fathoms; and Bass Strait, 38 fathoms (Brady): from Cape Verde, Mauritius, west and east Australia (Egger): from the Malay Archipelago (Millett): Cuba and Trinidad (Flint): Great Barrier Island, New Zealand (Chapman): Hauraki Gulf, New Zealand (Hæusler).

Present Occurrence.—Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; very common.

Miliolina circularis, Born. sp., var. **sublineata**, Brady. (Plate XIII, fig. 7.)

Miliolina circularis, Bornemann sp., var. *sublineata*, Brady, 1884, Rep. Chall., vol. ix, p. 169, pl. ix, figs. 7 a-c. *M. circularis*, Born. sp., var. *sublineata*, Brady, Egger, 1893, Abhandl. d. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 237, pl. ii, figs. 78, 79. *M. circularis*, Born. sp., var. *sublineata*, Brady, Millett, 1898, Journ. R. Micr. Soc., p. 501, pl. xi, fig. 4.

This is a rare variety. Our example is fairly typical, with the exception that the striae are somewhat stronger and more irregular than usual.

Distribution.—Off the Admiralty Islands (Brady); coast of Mauritius (Egger); Malay Archipelago (Millett).

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

Miliolina subrotunda, Montagu sp.

“*Serpula subrotunda dorso elevato*,” Walker and Boys, 1784, Test. Min., p. 2, pl. i, fig. 4. *Vermiculum subrotundum*, Montagu, 1803, Test. Brit., pt. ii, p. 521. *Miliolina subrotunda*, Montagu sp., Brady, 1884, Rep. Chall., vol. ix, p. 168, pl. v, figs. 10, 11. *M. subrotunda*, Walker and Boys sp., Goës, 1894, Kongl. Svenska Vet.-Akad. Handl., vol. xxv, p. 109, pl. xix, figs. 846, 847.

Distribution.—A shallow-water form, with a wide geographical range.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; very common.

Miliolina seminulum, Linné sp.

Serpula seminulum, Linné, 1767, Syst. Nat., 12th ed., p. 1264, No. 791; 1788, 13th (Gmelin's) ed., p. 3739, No. 2. *Miliolina seminulum*, Linné sp., Brady, 1884, Rep. Chall., vol. ix, p. 157, pl. v, figs. 6 a-c. *M. seminulum*, L. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 297, pl. xliii, fig. 2.

Distribution.—One of the most ubiquitous of the genus, occurring commonly in the shore-sand of nearly every coast-line, and more sparingly at greater depths. Strangely enough, it was extremely rare in the Great Barrier Island dredgings.* Hæusler has noted its occurrence in the Hauraki Gulf.

* Chapman, Trans. N.Z. Inst., vol. xxxviii, 1905, p. 81.

Present Occurrence.—Off the Snares; 60 fathoms; common, and generally small. Twenty miles north of Auckland Island; 85 fathoms; very common, and small. Ten miles north of Enderby Island; 85 fathoms; common, and typical.

Miliolina oblonga, Montagu sp.

Vermiculum oblongum, Montagu, 1803, Test. Brit., p. 522, pl. xiv, fig. 9.

Miliolina oblonga, Mont. sp., Brady, 1884, Rep. Chall., vol. ix, p. 160, pl. v, figs. 4 a, b. *M. oblonga*, Mont. sp., Goës, 1894, Kongl. Svenska Vet.-Akad. Handl., vol. xxv, p. 110, pl. xx, figs. 850–850f. *M. oblonga*, Mont. sp., Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 17, pl. ii, fig. 26.

Distribution.—Common in almost all shallow-water deposits. It has been recorded from the Hauraki Gulf, New Zealand (Haeusler).

Present Occurrence.—North-east of Bounty Island; 50 fathoms; very rare. Off the Snares; 60 fathoms; frequent; rather small. Twenty miles north of Auckland Island; 85 fathoms; rare; small. Ten miles north of Enderby Island; 85 fathoms; common; small.

Miliolina trigonula, Lamarck sp.

Miliolites trigonula, Lamarck, 1804, Ann. du Muséum, vol. v., p. 351, No. 3.

Miliolina trigonula, Lam. sp., Brady, 1884, Rep. Chall., vol. ix, p. 164, pl. iii, figs. 14–16. *M. trigonula*, Lam. sp., Goës, 1894, Kongl. Svenska Vet.-Akad. Handl., vol. xxv, p. 115, pl. xxii, fig. 870.

Distribution.—Rather widely dispersed, and commoner in temperate seas.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

Miliolina tricarinata, d'Orbigny sp.

Triloculina tricarinata, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 299,

No. 7. *Miliolina tricarinata*, d'Orb. sp., Brady, 1884, Rep. Chall., vol. ix, p. 165, pl. iii, figs. 17 a, b. *M. (Triloculina) tricarinata*, d'Orb. sp., Egger, 1893, Abhandl. d. k. bayer. Akad. Wiss., cl. ii, vol. xviii, abth. ii, p. 234, pl. ii, figs. 35–37.

It is of interest to note that this species is often found of large dimensions, especially in the neighbourhood of coral reefs. In certain Tertiary deposits also, as in those of Victoria, very large examples are met with.

Distribution.—This species has a very wide range. Its bathymetrical limits, as given by Dr. H. B. Brady, are from 6 to 2,350 fathoms.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; rare, and rather small.

Miliolina vulgaris, d'Orbigny sp.

Quinqueloculina vulgaris, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 302,

No. 33. *Miliolina auberiana*, d'Orb. sp., Brady, 1884, Rep. Chall., vol. ix, p. 162, pl. v, figs. 8, 9. *M. vulgaris*, d'Orb. sp., Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 18, pl. ii, fig. 32.

This form appears to graduate into *M. seminulum* by elongation, and into *M. circularis* by a shortening and depression of the test.

Distribution.—North Atlantic; West Indies; Mediterranean; Great Barrier Island, New Zealand.

Present Occurrence.—Off the Snares; 60 fathoms; common. Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; very common.

***Miliolina angulata*, Williamson. (Plate XIII, fig. 5.)**

Miliolina bicornis, Walker and Jacob sp., var. *angulata*, Williamson, 1858, Recent Foram. Gt. Brit., p. 88, pl. vii, fig. 196. *M. angulata*, Williamson, Goës, 1894, Kongl. Svenska Vet.-Akad. Handl., vol. xxv, No. 9, p. 113, pl. xx, fig. 858; pl. xxi, figs. 859–859e.

This species is a small, contracted, and angulated form of the *M. seminulum* type.

Distribution.—*M. angulata* has been recorded from the shores of Great Britain and Scandinavia.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; common.

***Miliolina polygona*, d'Orbigny sp. (Plate XIII, fig. 6.)**

Quinqueloculina polygona, d'Orbigny, 1839, Foram. Cuba, p. 198, pl. xii, figs. 21–23. *Miliolina polygona*, d'Orb. sp., Goës, 1894, Kongl. Svenska Vet.-Akad. Handl., vol. xxv, No. 9, p. iii, pl. xx, figs. 854–854g.

Distribution.—The original specimens were from Cuban shore-sand. Goës has recorded this species from the Caribbean Sea.

Present Occurrence.—Off the Snares; 60 fathoms; frequent. Twenty miles north of Auckland Island; 85 fathoms; rare; typical. Ten miles north of Enderby Island; 85 fathoms; rare; typical.

***Miliolina venusta*, Karrer sp.**

Quinqueloculina venusta, Karrer, 1868, Sitzungsber. k. Akad. Wiss. Wien, vol. lviii, p. 147, pl. ii, fig. 6. *Miliolina venusta*, Karrer sp., Brady, 1884, Rep. Chall., vol. ix, p. 162, pl. v, figs. 5, 7. *M. venusta*, Karrer sp., Egger, 1893, Abhandl. k. Bayer. Akad. Wiss., cl. ii, vol. xviii, p. 235, pl. ii, figs. 56–58. *M. venusta*, Karrer sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 298, pl. xlv, fig. 2.

Distribution.—Found in the North and South Atlantic and the North and South Pacific (Brady); west coast of Patagonia and Gulf of Tokyo (Flint). This species is most at home in deep water, but is occasionally found in moderately shallow seas. Egger records it off the coast of Western Australia.

Present Occurrence.—Off the Snares; 60 fathoms; frequent. Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; frequent.

Miliolina ferussacii, d'Orbigny sp.

Quinqueloculina ferussacii, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 301, No. 18; modèle No. 32. *Miliolina ferussacii*, d'Orb. sp., Brady, 1884, Rep. Chall., vol. ix, p. 175, pl. cxiii, figs. 17 *a*, *b*.

Distribution.—This is a widely distributed form. Parker and Jones record it from Baffin's Bay. Brady notes it from the shores of Great Britain, Belgium, and France, the Canaries, and the West Indies. In the Southern Hemisphere it has been noted from Torres Strait.

Present Occurrence.—Off the Snares; 60 fathoms; frequent; typical. Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

Miliolina chrysostoma, sp. nov. (Plate XIII, figs. 8–10; Plate XIV, figs. 1 and 4.)

Description.—Test moderately large, elongately oval, compressed; two to three chambers visible on each side, the penultimate well inflated, and sometimes even globose. Aboral end rounded, oral end blunt; aperture laterally compressed, and divided by a prominent septum which extends down to the suture of the penultimate chamber, and sometimes projects beyond the orifice. Septum generally a simple lamina, but sometimes feebly T-shaped. Oral extremity usually stained of a deep-orange tint.

Measurements.—Length of a typical specimen, 1.6 mm.; greatest breadth, 0.94 mm.

Observations.—This species is given to extreme variation, some tests being laterally compressed and triloculine, whilst others are subglobose and externally biloculine. Certain malformations occur, wherein the penultimate chamber is not completely enclosed by the last chamber but has its oral aperture extruding from what is normally the aboral end of the test. In vertical section the test is seen to consist of few chambers, the later of which possess a prominent and characteristic form of aperture; and in each chamber the orange tint of the buccal area can be seen.

Affinities.—This species calls to mind *Miliolina (Adelosina) laevigata*, d'Orbigny,* but is distinguished by the rounded periphery and the prominent and persistent septum. In general contour, however, the present species bears relationship with Brady's *M. valvularis* (Reuss),† figured from "Challenger" specimens dredged off the north-east coast of New Zealand at 1,100 fathoms. Although related, our specimens are specifically distinct, since not one of them shows the characteristic aperture with the puckered lips as figured by Dr. Brady.

Occurrence.—Off the Snares; 60 fathoms; frequent. Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; common.

* Foram. Foss. Vienne, 1845, p. 302, pl. xx, figs. 22–24. Schlumberger, Bull. Soc. Zool. France, 1886, vol. xi, p. 549, pl. xvi, figs. 19–21; woodcut, fig. 6.

† Rep. Chall., vol. ix, 1884, p. 161, pl. iv, figs. 4, 5.

Genus SIGMOÏLINA, Schlumberger, 1887.

Sigmoïlina schlumbergeri, Silvestri.

Planispirina celata (non Costa sp.), Brady, 1884, Rep. Chall., vol. ix, p. 197, pl. viii, figs. 1-4. *Sigmoïlina schlumbergeri*, A. Silvestri, 1904, Mem. dell' Pontif. Acc. Romana d. Nuovi Lincei, vol. xxii, p. 267. *S. schlumbergeri*, Silvestri, Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 21, pl. ii, fig. 42.

The young forms of this species are pellucid, the incrustation of the test being apparently a character appertaining to the more fully grown shell.

Distribution.—The species has a wide range, and is not restricted to any particular depth. It is also found fossil in the Australian Tertiary beds.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

Sigmoïlina celata, Costa sp.

Spiroloculina celata, Costa, 1856, Atti Acc. Pontan., vol. vii, pt. 1a, pl. xxvi, fig. 5. *Sigmoïlina celata*, Costa sp., Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 21, pl. ii, fig. 41.

The present example is the broader form, as distinct from *S. schlumbergeri*. It is more usually found in late Tertiary deposits.

Present Occurrence.—Off the Snares; 60 fathoms; very rare.

Subfam. HAUERININAE.

Genus ARTICULINA, d'Orbigny, 1826.

Articulina funalis, Brady. (Plate XIV, fig. 3.)

Articulina funalis, Brady, 1884, Rep. Chall., vol. ix, p. 185, pl. xiii, figs. 6-11. *A. funalis*, Brady, Egger, 1893, Abhandl. d. k. bayer. Akad. Wiss., cl. ii, vol. xviii, abth. ii, p. 242, pl. iii, fig. i. *A. funalis*, Brady, Millett, 1898, Journ. R. Micr. Soc., p. 513. *A. funalis*, Brady, Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 22, pl. ii, fig. 44.

Distribution.—This is a rare form, having occurred only at Kerguelen Island; off Prince Edward Island; Humboldt Bay, north coast of Papua; the Malay Archipelago; the Mauritius; and off Western Australia. The writer recorded it fossil from the Tertiary beds of Grice's Creek, Port Phillip.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms. A single example, fortunately showing the initial series and about 4 succeeding segments.

Genus PLANISPIRINA, Seguenza, 1880.

Planispirina exigua, Brady

Planispirina exigua, Brady, 1884, Rep. Chall., vol. ix, p. 196, pl. xii, figs. 1-4; woodcut, 5b. *P. exigua*, Brady, Egger, 1893, Abhandl. d. k.

bayer. Akad. Wiss., cl. ii, vol. xviii, abth. ii, p. 53, pl. iii, figs. 11, 12. *P. exigua*, Brady, Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 21, pl. ii, fig. 43.

This species is usually of shallow-water habitat. The specimens noted here have the central series of chambers unusually distinct.

Distribution.—Common in tropical seas. Egger records it from the west African coast, the Mauritius, and off Western Australia.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; rare.

Planispirina sphaera, d'Orbigny sp.

Biloculina sphaera, d'Orbigny, 1839, Foram. Amér. Mérid., p. 66, pl. viii, figs. 13–16. *B. sphaera*, d'Orb., Brady, 1884, Rep. Chall., vol. ix, p. 141, pl. ii, figs. 4 *a*, *b*. *Planispirina sphaera*, d'Orb. sp., Schlumberger, Mém. Soc. Zool. France, p. 577; woodcuts, 45, 46.

Distribution.—A well-distributed species, although never very abundant. Previously recorded from the New Zealand area by the "Challenger" (H. B. Brady), and from Great Barrier Island by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; frequent.

Planispirina bucculenta, Brady sp. (Plate XIV, fig. 2.)

Miliola (Triloculina) cryptella, Parker and Jones (non d'Orbigny), 1865, Phil. Trans., vol. clv, p. 410, pl. xv, figs. 39 *a*, *b*. *Miliolina bucculenta*, Brady, 1884, Rep. Chall., vol. ix, p. 170, pl. cxiv, figs. 3 *a*, *b*. *Planispirina bucculenta*, Brady sp., Schlumberger, 1892, Mém. Soc. Zool. France, vol. v, p. 194, pl. viii, figs. 6, 7; woodcuts, 2–4.

Distribution.—The "Challenger" records are three localities in the North Atlantic. Dr. Egger found it in "Gazelle" soundings between New Amsterdam and Australia.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; frequent.

Planispirina bucculenta, var. *placentiformis* Brady, var.

Miliolina bucculenta, var. *placentiformis*, Brady, 1884, Rep. Chall., vol. ix, p. 171, pl. iv, figs. 1, 2.

Distribution.—This variety has been dredged off Culebra Island, at 490 fathoms; and from Balfour Bay, Kerguelen Island, from 20 to 50 fathoms.

Present Occurrence.—Off the Snares; 60 fathoms; very rare.

Planispirina antarctica, sp. nov. (Plate XIV, figs. 5 *a*, *b*.)

Description.—Test subdiscoidal, compressed, slightly concave in median area. The outer three chambers nearly covering the test. Sutures not distinctly marked. Periphery rounded. Aperture a curved slit extending slightly over the lateral faces. Surface polished. Greatest diameter of type specimen, 0.8 mm.; thickness, 0.25 mm.

Observations.—This species resembles a greatly compressed form of the preceding variety, *placentiformis*. It is, however, more regular in outline, and has the aperture limited almost to the periphery.

Occurrence.—Off the Snares; 60 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; rare.

Subfam. PENEROPLIDINAE.

Genus CORNUSPIRA, Schultze, 1854.

Cornuspira involvens, Reuss sp.

Operculina involvens, Reuss, 1850, Denkschr. k. Akad. Wiss. Wien, vol. i, p. 370, pl. xlvi, fig. 20. *Cornuspira involvens*, Rss. sp., Brady, 1884, Rep. Chall., vol. ix, p. 200, pl. xi, figs. 1-3. *C. involvens*, Rss. sp., Egger, 1893, Abhandl. d. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 246, pl. iii, figs. 18, 19. *C. involvens*, Rss. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 303, pl. xlvi, fig. 3.

Distribution.—This species has an unrestricted range. It has been recorded from the Southern Ocean, but the present appears to be its first occurrence in the New Zealand area.

Present Occurrence.—Off the Snares; 60 fathoms; very rare.

Fam. ASTORRHIZIDAE.

Subfam. RHABDAMMININAE.

Genus HYPERAMMINA, Brady, 1878.

Hyperammina ramosa, Brady.

Hyperammina ramosa, Brady, 1884, Rep. Chall., vol. ix, p. 261, pl. xxiii, figs. 15-19. *H. ramosa*, Brady, Egger, 1893, Abhandl. d. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 255, pl. iv, fig. 15.

A single example of a test formed of cemented sponge-spicules and small foraminiferal shells (*Globigerina*, &c.).

Distribution.—This species appears to be more frequent in the Northern Hemisphere. Dr. Egger records it from a Western Australian station, at 4,298 metres. It occurred in the "Challenger" dredgings from the New Zealand area.

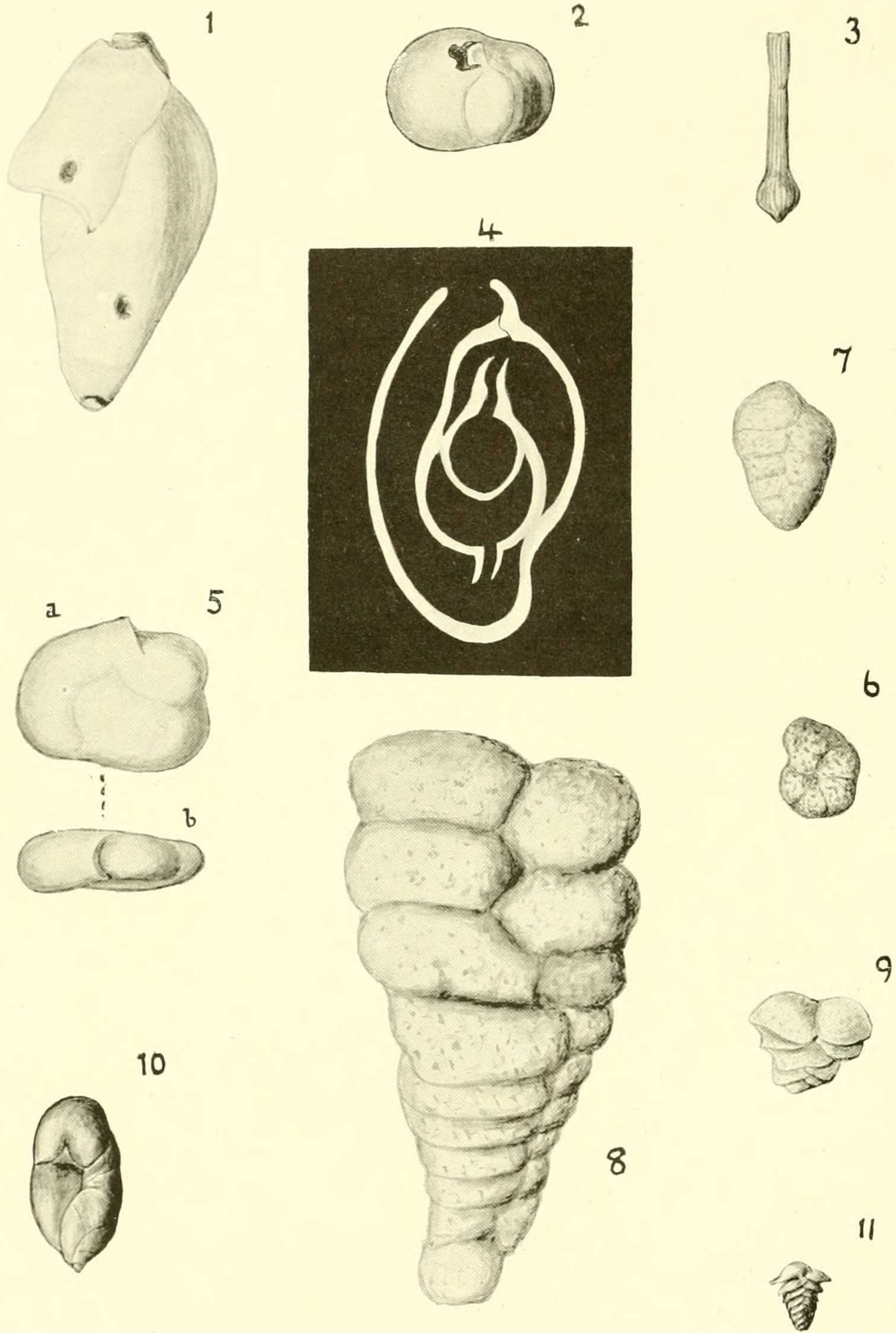
Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms.

Genus RHIZAMMINA, Brady.

Rhizammina indivisa, Brady.

Rhizammina indivisa, Brady, 1884, Rep. Chall., vol. ix, p. 277, pl. xxix, figs. 5-7. *R. indivisa*, Brady, Egger, 1893, Abhandl. d. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 256, pl. iv, fig. 17.

The specimens from north of Enderby Island differ from those described by Dr. Brady in having numerous siliceous sponge-spicules firmly cemented into the



X 36.

PLATE XIV.

test. The tube is flexible and wrinkled in other examples as in typical specimens, and the tube is composed of fine sand without spicules.

Distribution.—The Faroe Channel; off the Cape of Good Hope; and off Kandavu Island (Brady). Cape Verde (Egger).

Present Occurrence.—Perseverance Harbour, Campbell Island; 8 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; rare.

Fam. LITUOLIDAE.

Subfam. LITUOLINAE.

Genus REOPHAX, Montfort, 1808.

Reophax scorpiurus, Montfort.

Reophax scorpiurus, Montfort, 1808, Conchyl. Systém., vol. i, p. 330, 83° genre. *R. scorpiurus*, Montf., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 273, pl. xvi, fig. 3.

The tests of the present examples are white, and composed chiefly of small foraminiferal shells.

Distribution.—This species has a wide geographical range, and frequents shallow water down to 3,950 fathoms (Brady). It has been recorded from the New Zealand area by Dr. Brady; from the Hauraki Gulf by Dr. Hæusler; and from Great Barrier Island by the writer.

Present Occurrence.—Perseverance Harbour, Campbell Islands; 8 fathoms; rare.

Reophax nodulosa, Brady.

Reophax nodulosa, Brady, 1879, Quart. Journ. Micr. Sci., vol. xix, n.s., p. 52, pl. iv, figs. 7, 8. *R. nodulosa*, Brady, 1884, Rep. Chall., vol. ix, p. 294, pl. xxxi, figs. 1-9.

Distribution.—Like the preceding, this form is widely distributed. It was found in the "Challenger" series from the New Zealand area.

Present Occurrence.—Perseverance Harbour, Campbell Islands; 8 fathoms; a fragmentary example.

Genus HAPLOPHRAGMIUM, Reuss, 1860.

Haplophragmium canariense, d'Orbigny sp. (Plate XIV, fig. 6.)

Nonionina canariensis, d'Orbigny, 1839, Foram. Canaries, p. 128, pl. ii, figs. 33, 34. *Haplophragmium canariense*, d'Orb. sp., Brady, 1884, Rep. Chall., vol. ix, p. 310, pl. xxxv, figs. 1-5.

A single specimen, of a neat, compressed variety, was found in the present series of gatherings.

Distribution.—A cosmopolitan species. Recorded by Dr. Hæusler from the Hauraki Gulf, New Zealand; and from Great Barrier Island by the writer.

Present Occurrence.—Off the Snares; 60 fathoms.

Fam. TEXTULARIIDAE.

Subfam. TEXTULARIINAE.

Genus TEXTULARIA, DeFrance, 1824.

Textularia agglutinans, d'Orbigny.

Textularia agglutinans, d'Orbigny, 1839, Foram. Cuba, p. 136, pl. i, figs. 17, 18, 32-34. *T. agglutinans*, d'Orb., Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv, p. 35, pl. vii, figs. 300-303.

Distribution.—Unrestricted as to geographical range and depth. Previously recorded from New Zealand by the "Challenger."

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; a single depauperated specimen.

Textularia gibbosa, var. **tuberosa**, d'Orbigny. (Plate XIV, fig. 7.)

Textularia tuberosa, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 263, No. 26. *T. aspera*, Brady, 1882, Proc. R. Soc. Edin., vol. xi, p. 715; *id.*, 1884, Rep. Chall., vol. ix, p. 367, pl. xlv, figs. 9-13. *T. gibbosa*, var. *tuberosa*, d'Orb., Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 26, pl. iv, fig. 76.

The tests in the present specimens are not dark-coloured like the usual Recent specimens; they are also undersized.

Distribution.—Previously found in the New Zealand area, and off Great Barrier Island.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; rare.

Textularia concava, Karrer sp.

Plecanium concavum, Karrer, 1868, Sitzungsber. d. k. Ak. Wiss. Wien, vol. lviii, p. 129, pl. i, fig. 3. *Textularia concava*, Karrer sp., Brady, 1884, Rep. Chall., vol. ix, p. 360, pl. xlii, figs. 13, 14; pl. xliii, fig. 11.

Our specimens are very typical.

Distribution.—Brady records this species from seven localities in the South Pacific, as well as from other widely separated areas. It has previously occurred in the New Zealand area.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; very rare. Off the Snares, 60 fathoms; frequent; rather small examples. Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; common.

Textularia gramen, d'Orbigny. (Plate XIV, fig. 8.)

Textularia gramen, d'Orbigny, 1846, Foram. Foss. Vienne, p. 248, pl. xv, figs. 4-6. *T. gramen*, d'Orb., Haeusler, 1890, Abhandl. Schweizer. Pal. Gesellsch., vol. xvii, p. 71, pl. xi, figs. 26, 27, 37. *T. gramen*, d'Orb., Fornasini, 1891, Foram. Plioc. del Ponticello di Savena, pl. ii, fig. 6. *T. gramen*, d'Orb., Millett, 1899, Journ. R. Micr. Soc.,

p. 563. *T. gramen*, d'Orb., Chapman, 1906, Trans. N.Z. Inst., vol. xxxviii, p. 87; *id.*, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 25, pl. iii, fig. 53.

There is a wide amount of variation among the examples of the above species in the present series. Typical short and broad forms are common, but the tendency is for the test to continue to develop far beyond the ordinary adult form, and to put on a lengthy series of chambers, which in their greater inflation resemble those of *T. agglutinans*. This feature was also noticed by Mr. Millett (*loc. supra cit.*) in regard to the Malay specimens; and he says in regard to them, "In the majority the earlier-formed portion of the test resembles *sagittula*, the later portion *agglutinans*." In all three soundings in which this species occurs a large proportion of the shells have a *Spiroplecta*-like commencement—*i.e.*, with a 1-whorled spiral having a central megalosphere, and thus belonging to form A.

Distribution.—Widely dispersed. Common in moderately shallow water. Recorded by the writer from Great Barrier Island, at 110 fathoms.

Present Occurrence.—Off the Snares; 60 fathoms; common. Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; very common.

***Textularia gramen*, d'Orbigny, var. *jugosa*, Jones. (Plate XIV, fig. 9.)**

Textularia sagittula, Defrance, var. *jugosa*, Brady, Jones, 1895, Pal. Soc. Mon., Crag. Foram., p. 145, pl. v, fig. 19. *T. gramen*, d'Orb., var. *jugosa*, Jones, Millett, 1899, Journ. R. Micr. Soc., p. 561, pl. vii, fig. 8.

An arenaceous variety, corresponding in external form with the hyaline *jugosa* of Brady.

Distribution.—Fossil in the Pliocene of England and Italy. Found recent only by Mr. Millett in the Malay Archipelago.

Present Occurrence.—Off the Snares; 60 fathoms; rare.

***Textularia candeina*, d'Orbigny.**

Textularia candeina, d'Orbigny, 1839, Foram. Cuba, p. 143, pl. i, figs. 25–27. *T. sagittula*, Defr., var. *candeina*, d'Orb., Millett, 1899, Journ. R. Micr. Soc., p. 562, pl. vii, fig. 12.

Distribution.—The type example came from the West Indies. Some allied forms, as pointed out by Millett, occur in Oolitic and Tertiary strata.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very rare.

Genus SPIROPLECTA, Ehrenberg, 1844.

***Spiroplecta sagittula*, Defrance sp.**

Textularia sagittula, Defrance, 1824, Dict. Sci. Nat., vol. xxxii, p. 177; Atlas Conch., pl. xiii, fig. 5. *T. sagittula*, Defr., Brady, 1884, Rep. Chall., vol. ix, p. 361, pl. xlii, fig. 17. *Spiroplecta sagittula*, Defr. sp., Wright, 1902, Irish Nat., vol. xi, p. 211, pl. iii, figs. A–E. *S. wrighti*, Silvestri, 1903, Atti Accad. Nuovi Lincei, Ann. 56, Sessione 3, p. 59.

Some of our specimens have a nearly parallel-sided test, resembling d'Orbigny's *Textularia nussdorfensis*.

Distribution.—A well-known form in temperate seas, and more abundant at moderate depths. Recorded from the New Zealand area by the "Challenger" (Sta. 169), and off Great Barrier Island, 110 fathoms, by the writer. Dr. Egger records this species from the Western Australian coast.

Present Occurrence.—Off the Snares; 60 fathoms; frequent. Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; frequent.

Subfam. BULIMININAE.

Genus BULIMINA, d'Orbigny, 1826.

Bulimina elegantissima, d'Orbigny.

Bulimina elegantissima, d'Orbigny, 1839, Foram. Amér. Mérid., p. 51, pl. vii, figs. 13, 14. *B. elegantissima*, d'Orb., Brady, 1884, Rep. Chall., vol. ix, p. 402, pl. l, figs. 20-22.

Distribution.—This species is widely dispersed. It has been recorded in the Southern Hemisphere from the Falkland Islands, the east coast of Australia, the South Pacific, and west coast of South America ("Challenger"). Dr. Egger records it off Western Australia.

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; frequent.

Bulimina elegantissima, d'Orb., var. *apiculata*, Chapman.

Bulimina elegantissima, d'Orb., var. *apiculata*, Chapman, 1907, Journ. Linn. Soc. Lond., Zool., vol. xxx, p. 31, pl. iv, fig. 77.

It is of much interest to note the occurrence in the subantarctic material of this variety, which was previously described from the Tertiary beds of Victoria.

Present Occurrence.—Off the Snares; 60 fathoms; rare.

Bulimina subteres, Brady. (Plate XIV, fig. 10.)

Bulimina subteres, Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi, n.s., p. 55; *id.*, 1884, Rep. Chall., vol. ix, p. 403, pl. l, figs. 17, 18. *B. subteres*, Brady, Egger, 1893, Abhandl. d. k. bayer. Ak. Wiss., cl. ii, vol. xviii, p. 289, pl. viii, figs. 73, 74.

Distribution.—This species has a wide range. Egger records it from the east and west coast of Australia.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; rare.

Bulimina marginata, d'Orbigny.

Bulimina marginata, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 269, No. 4, pl. xii, figs. 10-12. *B. marginata*, d'Orb., Goës, 1894, K. Svenska Vet.-

Akad. Handl., vol. xxv, p. 46, pl. ix, figs. 439-444. *B. marginata*, d'Orb., Wright, 1900, Geol. Mag., Dec. 4, vol. vii, p. 100, pl. v, fig. 4. *B. marginata*, d'Orb., Chapman, 1906, Trans. N.Z. Inst., vol. xxxviii, p. 89.

Distribution.—This species has a wide range, and is unrestricted as to depth. It has already occurred in the New Zealand area, off Great Barrier Island.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

***Bulimina contraria*, Reuss.**

Rotalina contraria, Reuss, 1851, Zeitschr. d. deutsch. Gesellsch., vol. iii, p. 76, pl. v, fig. 37. *Bulimina contraria*, Reuss sp., Brady, 1884, Rep. Chall., vol. ix, p. 409, pl. liv, figs. 18 a-c.

Distribution.—This is a rather rare species. The "Challenger" obtained it from nine stations. It appears to be new to the New Zealand area.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very rare, and of small size.

Genus BOLIVINA, d'Orbigny, 1839.

***Bolivina robusta*, Brady.**

Bolivina robusta, Brady, 1884, Rep. Chall., vol. ix, p. 421, pl. liii, figs. 7-9. *B. robusta*, Brady, Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 294, pl. viii, figs. 31, 32.

Typical examples occur here, having a short aboral spine.

Distribution.—Dr. Brady states that out of twenty-two localities where this species occurs thirteen are in the South Pacific. Egger records it from the Mauritius, New Guinea, Western Australia, and New Amsterdam. Millett records it as occurring sparingly in the Malay Archipelago. The writer has already noted it from the New Zealand area, at Great Barrier Island.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

***Bolivina pygmaea*, Brady. (Plate XIV, fig. 11.)**

Bolivina pygmaea, Brady, 1884, Rep. Chall., vol. ix, p. 421, pl. liii, figs. 5, 6. *B. pygmaea*, Brady, Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 295, pl. viii, figs. 48-50.

Distribution.—This rare little form was noted by Dr. Brady from the Canary Islands; off Prince Edward Island; off Nightingale Island, Tristan da Cunha; and in the Faroe Channel. The Rev. A. M. Norman had it from near Bergen, Norway. Egger records it from Cape Verde, off west Africa, off Western Australia, and New Guinea. This is its first occurrence in the New Zealand area.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very rare.

Subfam. CASSIDULININAE.

Genus CASSIDULINA, d'Orbigny, 1826.

Cassidulina laevigata, d'Orbigny. (Plate XV, fig. 1.)

Cassidulina laevigata, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 282 (No. 1), pl. xv, figs. 4, 5; modèle No. 41. *C. laevigata*, d'Orb., Brady, 1884, Rep. Chall., vol. ix, p. 428, pl. liv, figs. 1-3. *C. laevigata*, d'Orb., A. Silvestri, 1896, Pontif. Accad. Nuovi Lincei, vol. xii, p. 103, pl. ii, fig. 10.

Distribution.—A very widely distributed species, found as far south as the antarctic ice-barrier; also recorded by the writer from Great Barrier Island, New Zealand.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; very rare. Off the Snares; 60 fathoms; rare and small. Twenty miles north of Auckland Island; 85 fathoms; frequent; typical. Ten miles north of Enderby Island; 85 fathoms; common; typical; one example with dentate margin (figured).

Cassidulina oblonga, Reuss.

Cassidulina oblonga, Reuss (non d'Orb. emend P. J. and B.), 1850, Denkschr. k. Ak. Wiss. Wien, vol. i, p. 376, pl. xlvi, figs. 5, 6. *C. crassa*, d'Orbigny (pars), Brady, 1884, Rep. Chall., vol. ix, pl. liv, fig. 4. *C. oblonga*, Reuss., Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 303, pl. vii, figs. 33, 34.

This form is distinguished from *C. subglobosa*, Brady, by its distinct sutures and slit-like aperture; and from *C. crassa*, d'Orb., by the more elongate test.

Distribution.—Dr. Egger records this species from west Africa, off Cape Town, the Mauritius, Kerguelen Island, and off Western Australia.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; rare.

Cassidulina subglobosa, Brady.

Cassidulina subglobosa, Brady, 1884, Rep. Chall., vol. ix, p. 430, pl. liv, figs. 17 a-c. *C. subglobosa*, Brady, Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 304, pl. vii, figs. 41, 42, 52, 53.

Distribution.—Dr. Brady regards this as a deep-water species. It is widely distributed. It has been recorded from Great Barrier Island, in the New Zealand area; and also from the "Challenger" dredgings.

Present Occurrence.—Off the Snares; 60 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; common.

Genus EHRENBURGIA, Reuss, 1849.

Ehrenbergina serrata, Reuss. (Plate XV, fig. 2.)

Ehrenbergina serrata, Reuss, 1849, Denkschr. d. k. Akad. Wiss. Wien, vol. i, p. 377, pl. xlvi, figs. 7 a-c. *E. serrata*, Reuss., Brady, 1884, Rep. Chall., vol. ix, p. 434, pl. lv, figs. 2-7.

This is a rather variable species, and the only example found is by no means typical. The aperture is situated on an inclined facet, and is distinctly pear-shaped,

as compared with the usual semicircular slit. The concave face of the test bears a single row of short spines.

Distribution.—A well-distributed form, but never abundant. Brady records it from the North and South Atlantic; from the North Pacific; and from ten stations in the South Pacific, from 150 to 2,075 fathoms. It is recorded from the New Zealand area in the "Challenger" summary.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; one example.

Fam. LAGENIDAE.

Subfam. LAGENINAE.

Genus LAGENA, Walker and Boys.

Lagena globosa, Montagu sp.

Serpula (Lagena) laevis globosa, Walker and Boys, 1784, Test. Min., p. 3, pl. i, fig. 8. *Vermiculum globosum*, Montagu, 1803, Test. Brit., p. 523. *Lagena globosa*, Montagu sp., Brady, 1884, Rep. Chall., vol. ix, p. 452, pl. lvi, figs. 1-3.

Distribution.—Found in every latitude. Recorded previously from the New Zealand area by the "Challenger."

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very rare (compressed var.). Ten miles north of Enderby Island; 85 fathoms; very rare.

Lagena gracilis, Williamson.

Lagena gracilis, Williamson, 1848, Ann. Mag. Nat. Hist., ser. 2, vol. i, p. 13, pl. i, figs. 3, 4. *L. gracilis*, Will., Reuss, 1862, Sitzungsber. d. k. Ak. Wiss. Wien, vol. xlvi, p. 331, pl. iv, figs. 58-61; pl. v, fig. 62. *L. gracilis*, Will., Egger, 1893, Abhandl. d. k. bayer. Akad. Wiss., cl. ii, vol. xviii, abth. ii, p. 328, pl. x, figs. 25, 33, 49.

A typical example, having a moderately short neck and delicately costulate body which is feebly apiculate, occurs here.

Distribution.—Extensive; more abundant in the Southern Hemisphere, and affecting deep water (Brady). The "Gazelle" specimens were found off west Africa, Western Australia, and between Fiji and South America (Egger). Recorded previously from the New Zealand area by the "Challenger."

Present Occurrence.—Off the Snares; 60 fathoms.

Lagena sulcata, Walker and Jacob sp. (Plate XV, fig. 4.)

Serpula (Lagena) striata sulcata rotundata, Walker and Boys, 1784, Test. Min., p. 2, pl. i, fig. 6. *Lagena sulcata*, W. and J. sp., Brady, 1884, Rep. Chall., vol. ix, p. 462, pl. lvii, figs. 23, 26, 33, 34; pl. lviii, figs. 4, 17, 18. *L. sulcata*, W. and J. sp., Chapman, 1906, Trans. N.Z. Inst., vol. xxxviii, p. 91.

One of the examples found (here figured) has a feeble spiral ornament on the tubular neck.

Distribution.—Dr. H. B. Brady remarks that this is “one of the most abundant and most generally diffused of all the members of the genus.” It has occurred in the Southern Ocean—at Heard Island, among other localities. Previously recorded from the New Zealand area, off Great Barrier Island, by the writer.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

Lagena lineata, Williamson sp. (Plate XV, fig. 3.)

Entosolenia lineata, Williamson, 1848, Ann. and Mag. Nat. Hist., ser. 2, vol. i, p. 18, pl. ii, fig. 18. *E. globosa*, var. *lineata*, Williamson, 1858, Rec. Foram. Gt. Brit., p. 9, pl. i, fig. 17. *Lagena lineata*, Williamson sp., Brady, 1884, Rep. Chall., vol. ix, p. 461, pl. lvii, fig. 13. *L. lineata*, Will. sp., Egger, 1893, Abhandl. d. k. bayer. Akad. Wiss., cl. ii, vol. xviii, abth. ii, p. 326, pl. x, figs. 29, 30.

Distribution.—Found in the European area generally. In the Southern Hemisphere Dr. Brady records it from Tristan da Cunha and the Kerguelen Island; also from the latter locality and off Western Australia by Dr. Egger.

Present Occurrence.—Off the Snares; 60 fathoms; rare.

Lagena acuticosta, Reuss.

Lagena acuticosta, Reuss, 1861, Sitzungsber. d. k. Ak. Wiss. Wien, vol. xlv, p. 305, pl. i, fig. 4. *L. acuticosta*, Reuss, Egger, 1893, Abhandl. d. k. bayer. Akad. Wiss., cl. ii, vol. xviii, abth. ii, p. 329, pl. x, figs. 80–84. *L. sulcata*, Walker and Boys, Goës, 1894, K. Svenska Vetensk.-Akad. Handl., vol. xxv, No. 9, p. 78, pl. xiii, figs. 742–744.

This species is distinct from *L. sulcata* by having few, elevated costae, and being without a prolonged neck.

Distribution.—According to Brady, the best examples come from deep water in the North and South Pacific. Egger records it from Kerguelen, the Mauritius, and Western Australia. Recorded previously from the New Zealand area (“Challenger”).

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; frequent.

Lagena hexagona, Williamson sp.

Entosolenia squamosa, var. *hexagona*, Williamson, 1848, Ann. Mag. Nat. Hist., ser. 2, vol. i, p. 20, pl. ii, fig. 23. *Lagena hexagona*, Will. sp., Brady, 1884, Rep. Chall., vol. ix, p. 472, pl. lviii, figs. 32, 33. *L. hexagona*, Will. sp., Wright, 1900 (in Mellard Reade), Geol. Mag., vol. vii, p. 101, pl. v, fig. 15. *L. hexagona*, Will. sp., A. Silvestri, 1902, Mem. d. Pont. Acc. Rom. d. Nuovi Lincei, vol. xix, p. 26; woodcuts, figs. 44, 44a, 45.

Distribution.—Widely dispersed. Generally affecting shallow to moderate depths. Previously dredged from the New Zealand area by the “Challenger.”

Also recorded from the Hauraki Gulf by Dr. Haeusler; and by the writer from Great Barrier Island, at 110 fathoms.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; common.

Lagena squamosa, Montagu sp. (Plate XV, fig. 5.)

Vermiculum squamosum, Montagu, 1803, Test. Brit., p. 526, pl. xiv, fig. 2.
Entosolenia squamosa, Mont. sp., Williamson, 1848, Ann. Mag. Nat. Hist., ser. 2, vol. i, p. 18, pl. ii, fig. 19. *Lagena squamosa*, Mont., sp., A. Silvestri, 1902, Mem. d. Pont. Acc. Rom. d. Nuovi Lincei, vol. xix, p. 23; woodcuts, figs. 38, 38a, 39.

Distribution.—Apparently unrestricted. Also having a wide bathymetrical range, but commoner in shallow water. Recorded in the "Challenger" gatherings from the New Zealand area. Haeusler obtained it from the Hauraki Gulf.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; very common.

Lagena montagui, Silvestri.

Lagena squamosa (pars) Brady, 1884, Rep. Chall., vol. ix, p. 471, pl. lviii, fig. 31. *L. montagui*, A. Silvestri, 1902, Mem. d. Pont. Acc. Rom. d. Nuovi Lincei, p. 25; woodcuts, figs. 40-43.

This form is distinguished from *L. squamosa* by the spherical body and entosolenian tube.

Distribution.—It is probably coextensive with Dr. Brady's recorded examples of *L. squamosa*.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; rare.

Lagena marginata, Walker and Boys. (Plate XV, fig. 6.)

Serpula (Lagena) marginata, Walker and Boys, 1784, Test. Min., p. 2, pl. i, fig. 7. *Lagena marginata*, W. & B. sp., Brady, 1884, Rep. Chall., vol. ix, p. 476, pl. lix, fig. 22. *L. marginata*, W. & B. sp., Fornasini, 1900, Mem. R. Accad. Sc. Bologna, ser. 5, vol. viii, p. 376; woodcut, fig. 25. *Fissurina marginata*, W. & B. sp., A. Silvestri, 1902, Mem. d. Pont. Accad. Rom. d. Nuovi Lincei, vol. xix, p. 21; woodcuts, figs. 33-35.

The form here referred to the species *L. marginata* is frequently noted under the synonym of *L. laevigata*, Reuss. On the other hand, the thin-flanged type of *Lagena* with eccentric aperture, which is also commonly referred to *L. marginata*, has been shown by Silvestri to be distinct, and is named by him *L. schlichti*.

Distribution.—*L. marginata* has a very wide range. It has been recorded from the "Challenger" dredgings in the New Zealand area.

Present Occurrence.—Off the Snares; 60 fathoms; common. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; common.

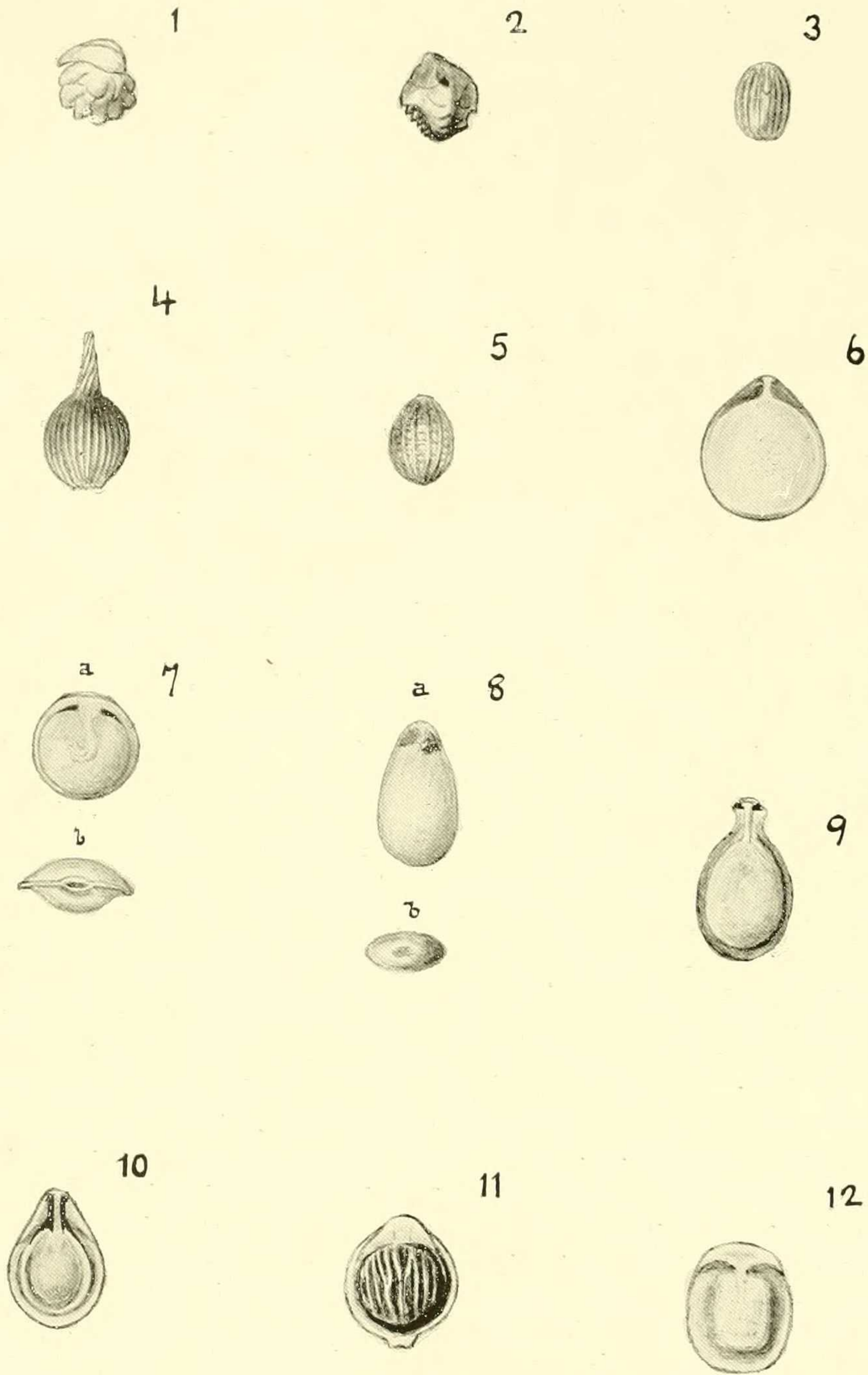


PLATE XV.

X 36.

Lagena marginata, W. & B. sp., var. **semimarginata**, Reuss.

Lagena marginata, W. & B. sp., var. *semimarginata*, Reuss, 1870, Sitzungsber. d. k. Ak. Wiss. Wien, vol. lxii, p. 468; Schlicht, 1870, Foram. Pietzpuhl, pl. iv, figs. 4-6, 10-12. *L. marginata*, W. & B. sp., var. *semimarginata* Reuss, Brady, 1884, Rep. Chall., vol. ix, p. 477, pl. lix, figs. 17, 19. *L. marginata*, W. & B. sp., var. *semimarginata*, Reuss, Millett, 1901, Journ. R. Micr. Soc., p. 619, pl. xiv, fig. 1.

Distribution.—Brady records this variety from the South Atlantic and the Southern Ocean, and Millett from the Malay Archipelago. In the "Challenger" lists it is included in the New Zealand area. The fossil examples came from the Tertiary clays of Pietzpuhl.

Present Occurrence.—Off the Snares; 60 fathoms; frequent. Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; common.

Lagena schlichti, A. Silvestri sp. (Plate XV, figs. 7 *a*, *b*.)

Fissurina schlichti, A. Silvestri, 1902, Mem. d. Pont. Acc. Rom. d. Nuovi Lincei, vol. xix, p. 14; woodcuts, figs. 9-11.

This species is often confused with *L. marginata*, W. & B. It has a distinctive eccentric aperture and a long entosolenian tube. Our specimens differ from Silvestri's Mediterranean form in having the margin entire, instead of denticulate, aborally.

Distribution.—It appears to be widely distributed.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; rare. Off the Snares; 60 fathoms; frequent. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; common.

Lagena biancae, Seguenza sp. (Plate XV, figs. 8 *a*, *b*.)

Fissurina biancae, Seguenza, 1862, Foram. Monotal. Mioc. Messina, p. 57, pl. i, figs. 48-50. *F. biancae*, Seg., A. Silvestri, 1902, Mem. d. Pont. Acc. Rom. d. Nuovi Lincei, vol. xix, p. 20; woodcuts, figs. 29-32.

Distribution.—Previously known from the Mediterranean area.

Present Occurrence.—Off the Snares; 60 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; rare.

Lagena orbignyana, Seguenza sp. (Plate XV, fig. 10.)

Fissurina orbignyana, Seguenza, 1862, Foram. Monotal. Mioc. Messina, p. 6, pl. ii, figs. 65, 66. *Lagena orbignyana*, Seg. sp., Brady, 1884, Rep. Chall., vol. ix, p. 484, pl. lix, figs. 1, and 24-26. *L. orbignyana*, Seg. sp., Egger, 1899, Abhandl. d. k. bayer. Ak. Wiss., cl. ii, vol. xxi, p. 104, pl. v, figs. 8, 9.

The majority of our specimens resemble Brady's fig. 25. The example figured by Brady under the same name (fig. 24) has been erected into a new species (*L. bradii*)

by Dr. A. Silvestri.* Some of the specimens met with here resemble that form, with the exception that the orifice is both ecto- and ento-solenian in the same shell—that is to say, the aperture is inverted, and then drawn out to form a tubular neck.

Distribution.—A cosmopolitan species. It is, however, new to the New Zealand area.

Present Occurrence.—Off the Snares; 60 fathoms; common. Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; very rare.

Lagena orbignyana, Seg. sp., var. **clathrata**, Brady. (Plate XV, fig. 11.)

Lagena clathrata, Brady, 1884, Rep. Chall., vol. ix, p. 485, pl. lx, fig. 4.

L. orbignyana, Seg. sp., var. *clathrata*, Brady, Millett, 1901, Journ. R. Micr. Soc., p. 628, pl. xix, fig. 23. *L. orbignyana*, Seg. sp., var. *clathrata*, Brady, Sidebottom, 1906, Mem. & Proc. Manch. Lit. & Phil. Soc., vol. 1, pt. ii, p. 14, pl. ii, fig. 16.

Distribution.—This rare and interesting form has been recorded from the shore-sands of Galway, Ireland (Balkwill and Millett); from the Ki Islands, 580 fathoms, and off Aru Island, south-west of New Guinea, 800 fathoms (Brady); from the Malay Archipelago (Millett); and from the Island of Delos, in the Mediterranean (Sidebottom).

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; frequent.

Lagena fasciata, Egger sp.

Oolina fasciata, Egger, 1857, Neues Jahrb. für Min., p. 270, pl. v, figs. 12–15.

Lagena quadricostulata, Reuss, Brady, 1884, Rep. Chall., vol. ix, p. 486, pl. lix, fig. 15. *L. fasciata*, Egger sp., Millett, 1901, Journ. R. Micr. Soc., p. 495, pl. viii, fig. 19.

Our specimens are small and very diaphanous in appearance.

Distribution.—Brady records this form (as *L. quadricostulata*) from two localities, both in the Southern Hemisphere—viz., Balfour Bay, Kerguelen Island, 20 to 50 fathoms; and off Sydney, 410 fathoms. Millett obtained it from the Malay Archipelago. In the “Challenger” lists it is also recorded for the New Zealand area (as *L. quadricostulata*).

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; rare.

Lagena lagenoides, Williamson sp., var. **nuda**, var. nov. (Plate XV, fig. 9.)

Our specimens generally resemble Williamson’s fig. 26,† but the peripheral flange, instead of being radiately striated, is quite plain and smooth. The eversion of the neck terminal is very marked in the present examples.

* Mem. d. Pont. Acc. Rom. d. Nuovi Lincei, vol. xix, p. 19; woodcuts, figs. 26–28.

† *Entosolenia marginata*, Williamson, Rec. Foram. Gt. Brit., 1858, p. 11, pl. i, figs. 25, 26.

Distribution of the Type Species.—Occurs on the shores of the British Islands (Williamson); the North and South Atlantic and the South Pacific (Brady); round the Island of Delos (Sidebottom).

Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; common.

Lagena quadrata, Williamson sp.

Entosolenia marginata, var. *quadrata*, Williamson, 1858, Rec. Foram. Gt. Brit., p. 11, pl. i, fig. 27. *Lagena quadrata*, Will. sp., Brady, 1884, Rep. Chall., vol. ix, p. 475, pl. lix, fig. 3. *L. quadrata*, Will. sp., Egger, 1893, Abhandl. d. k. bayer. Ak. Wiss., cl. ii, vol. xviii, abth. ii, p. 331, pl. x, figs. 78, 79. *L. quadrata*, Will. sp., Sidebottom, 1906, Mem. & Proc. Manch. Lit. & Phil. Soc., vol. 1, pt. ii, p. 8, pl. i, figs. 21, 22; pl. ii, figs. 1, 2.

Distribution.—Dr. H. B. Brady remarks that this species is influenced more by depth of water than by latitude, being found at depths less than 150 fathoms. Egger records it from west Africa, the Mauritius, New Guinea (from over 1,500 fathoms!), and Fiji; Millett obtained it from the Malay Archipelago, in comparatively shallow water. New to the New Zealand area.

Present Occurrence.—Off the Snares; 60 fathoms; one example.

Lagena quadrata, Williamson sp., var. *carinata*, var. nov. (Plate XV, fig. 12.)

Lagena quadrata, Williamson sp., Brady (pars), 1884, Rep. Chall., vol. ix, p. 475, pl. lix, fig. 16 (partially carinate specimen); pl. lx, fig. 5. *L. quadrata*, Will. sp., Millett, 1901, Journ. R. Micr. Soc., p. 496, pl. viii, fig. 18. *L. quadrata*, Will. sp., Sidebottom, 1906, Mem. & Proc. Manch. Lit. & Phil. Soc., vol. 1, pt. ii, p. 8, pl. ii, fig. 3.

Did the carinate form of the above species occur here very rarely it might be passed over as an aberrant form. All the examples, however, which were found in the present series are carinate, with one exception, so that it will serve a useful purpose to distinguish it as a definite variety. Our examples most resemble Brady's pl. lx, fig. 5, but one of the specimens is only partially carinate, as in pl. lix, fig. 16.

Distribution.—Millett finds this variety "in the Malay Archipelago, but only in small numbers." Sidebottom notes the partially carinate variety from the Island of Delos.

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; frequent.

Lagena enderbiensis, sp. nov. (Plate XVI, figs. 1 a, b.)

Description.—Test compressed; subovate, elongate. Shoulders sloping; aboral end often terminating in a blunt point. A submarginal border forming a roundly carinate edge on each side, not extending to oval area nor to the apical point. Orifice entosolenian, with apertural extremity often everted, but short. Length of type, 0.83 mm.; greatest width, 0.44 mm.

Observations.—This form resembles Williamson's original figures of *L. quadrata*, with the exception that the shoulders are more sloping in our examples, and also that the submarginal border is interrupted apically. The form is so constant in the present series that it seems justifiable to regard it as a distinct and new form.

Occurrence.—Off the Snares; 60 fathoms; very rare. Twenty miles north of Auckland Island; 85 fathoms; very common. Ten miles north of Enderby Island; 85 fathoms; very common.

Subfam. NODOSARIINAE.

Genus NODOSARIA, Lamarck, 1812.

Nodosaria subradicula, Schwager. (Plate XVI, fig. 2.)

Nodosaria subradicula, Schwager, 1866, "Novara" Exped., geol. Theil, vol. ii, p. 222, pl. v, fig. 50.

This is a striate form of *N. radicula*, L. sp., which was originally described by Schwager from the Pliocene of Kar Nicobar. The present occurrence seems to be its first appearance as a Recent form.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; one example.

Nodosaria oligostegia, Reuss.

Nodosaria oligostegia, Reuss, 1845-6, Verstein. böhm. Kreidof., pt. i, p. 27, pl. xii, figs. 19, 20. *N. simplex*, Silvestri, Brady, 1884, Rep. Chall., vol. ix, p. 496, pl. lxii, figs. 4, 5, ? 6.

Several fragmentary specimens, in all probability referable to the above, were found. This species is also common in certain fossil deposits of Cretaceous age.

Distribution.—The "Challenger" examples were dredged off the Ki Islands, and off the west coast of New Zealand.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; rare.

Nodosaria (Dentalina) roemeri, Neugeboren sp.

Dentalina roemeri, Neugeboren, 1856, Denkschr. d. k. Akad. Wiss. Wien, vol. xii, p. 82, pl. ii, figs. 13-17. *Nodosaria (Dentalina) roemeri*, Neug. sp., Brady, 1884, Rep. Chall., vol. ix, p. 505, pl. lxiii, fig. 1.

Distribution.—Most commonly met with in the North Atlantic. It has, however, been previously found in the New Zealand area, off Great Barrier Island, at 110 fathoms, in soundings examined by the writer.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

Nodosaria (Dentalina) communis, d'Orbigny.

Nodosaria (D.) communis, ? d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 254, No. 35. *Dentalina communis*, d'Orbigny, 1840, Mém. Soc. Géol. France, vol. iv, p. 13, pl. i, fig. 4.

Only fragmentary specimens were found in the present collection.

Distribution.—A cosmopolitan form.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; rare.

Nodosaria (Dentalina) consobrina, d'Orbigny sp.

Dentalina consobrina, d'Orbigny, 1846, Foram. Foss. Vienne, p. 46, pl. ii, figs. 1-3. *Nodosaria (D.) consobrina*, d'Orb. sp., Brady, 1884, Rep. Chall., vol. ix, p. 501, pl. lxii, figs. 23, 24.

Distribution.—This form is widely dispersed. It has been previously recorded from the New Zealand area, off Great Barrier Island, by the writer.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

Nodosaria (Dentalina) consobrina, d'Orb. sp., var. **emaciata**, Reuss. var.

Dentalina emaciata, Reuss, 1851, Zeitschr. d. deutsch. geol. Gesellsch., vol. iii, p. 63, pl. iii, fig. 9. *Nodosaria (D.) consobrina*, d'Orb. sp., var. *emaciata*, Reuss., Brady, 1884, Rep. Chall., vol. ix, p. 502, pl. lxii, figs. 25, 26.

Distribution.—Having a wide range. Previously recorded from the New Zealand area, off Great Barrier Island, by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; very rare.

Nodosaria (Dentalina) pyrula, d'Orbigny.

Nodosaria pyrula, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 253, No. 13. *N. (D.) pyrula*, d'Orb., Brady, 1884, Rep. Chall., vol. ix, p. 497, pl. lxii, figs. 10-12.

Distribution.—Widely dispersed. Previously recorded from off Great Barrier Island by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; frequent.

Nodosaria (Dentalina) obliqua, Linné sp.

Nautilus obliquus, Linné, 1767, Syst. Nat., 12th ed., pp. 1163, 281; 1788, *ibid.*, 13th (Gmelin's) ed., p. 3372, No. 14. *Nodosaria obliqua*, Linné sp., Goës, 1894, K. Svenska Vetenskaps-Akad. Handl., vol. xxv, No. 9, p. 70, pl. xii, figs. 691-696; pl. xiii, fig. 697.

Distribution.—Found in all seas. Recorded from the New Zealand area by the "Challenger"; and by the writer from Great Barrier Island, where it was very abundant.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very rare.

Nodosaria (Dentalina) obliqua, L. sp., var. **vertebralis**, Batsch var.

Nautilus (Orthoceras) vertebralis, Batsch, 1791, Conchyl. des Seesandes, p. 3, No. 6, pl. ii, figs. 6 *a*, *b*. *Nodosaria vertebralis*, Batsch sp., Brady, 1884, Rep. Chall., vol. ix, p. 514, pl. lxii, fig. 35; pl. lxiv, figs. 11-14.

Distribution.—Having a fairly wide range, but not usually found in high latitudes. Recorded previously from Great Barrier Island by the writer.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

Genus MARGINULINA, d'Orbigny, 1826.

Marginulina costata, Batsch sp.

Nautilus (Orthoceras) costatus, Batsch, 1791, Conchyl. des Seesandes, pl. i, fig. 1. *Marginulina costata*, Batsch sp., Millett, 1902, Journ. R. Micr. Soc., p. 526, pl. xi, fig. 20. *M. costata*, Batsch sp., Sidebottom, 1907, Mem. & Proc. Manch. Lit. & Phil. Soc., vol. li, pt. iii, p. 6, pl. i, figs. 29-32.

Distribution.—This species appears to be rare in the Southern Hemisphere, with the exception of Mr. Millett's record of specimens from the Malay Archipelago. It has previously been found in the New Zealand area by the "Challenger," but is not recorded in Hutton's "Index Faunae Novae-Zealandiae."

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

Genus VAGINULINA, d'Orbigny, 1826.

Vaginulina legumen, Linné sp.

Nautilus legumen, Linné, 1767, Syst. Nat., 12th ed., p. 1164, No. 288. *Vaginulina legumen*, L. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 314, pl. lx, fig. 2.

All our examples are typical.

Distribution.—Widely dispersed, and found at all depths down to 2,000 fathoms or more (H. B. Brady).

Present Occurrence.—Off the Snares; 60 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

Genus CRISTELLARIA, Lamarck, 1812.

Cristellaria schloenbachi, Reuss.

Cristellaria schloenbachi, Reuss, 1862, Sitzungsber. d. k. Ak. Wiss. Wien, vol. xlvi, p. 65, pl. vi, figs. 14, 15. *C. Schloenbachi*, Reuss, Egger, 1899, Abhandl. k. bayer. Ak. Wiss., cl. ii, vol. xxi, p. 110, pl. xii, figs. 38-40; pl. xxiv, figs. 30, 31.

Distribution.—A rare form, only found at a few localities in the West Indies and the Pacific. Recorded previously from Great Barrier Island by the writer. This species is not uncommon as a fossil, dating from the Cretaceous.

Present Occurrence.—Off the Snares; 60 fathoms; very rare.

Cristellaria crepidula, Fichtel and Moll sp.

Nautilus crepidula, Fichtel and Moll, 1798, Test. Micr., p. 107, pl. xix, figs. g-i. *Cristellaria crepidula*, F. & M. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 316, pl. lxiii, fig. 2.

Distribution.—This is usually a shallow-water form, but is occasionally met with in moderately deep water. It is widely distributed.

Present Occurrence.—Off the Snares; 60 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; frequent.

Cristellaria tricarinella, Reuss. (Plate XVI, fig. 3.)

Cristellaria tricarinella, Reuss, 1862, Sitzungsber. d. k. Ak. Wiss. Wien, vol. xlvi, p. 68, pl. vii, fig. 9; pl. xii, figs. 2-4. *C. tricarinella*, Rss., Brady, 1884, Rep. Chall., vol. ix, p. 540, pl. lxviii, figs. 3, 4. *C. tricarinella*, Rss., Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 351, pl. xii, figs. 28, 29. *C. tricarinella*, Rss., Chapman, 1905, Trans. & Proc. N.Z. Inst., vol. xxxviii, p. 96.

Distribution.—As a Recent form this species is comparatively rare. Dr. Brady records it from three localities—viz., off the Philippine Islands, off Raine Island, and off the west coast of New Zealand. Dr. Egger notes it from the Mauritius and off Western Australia. It has also occurred off Great Barrier Island, at 110 fathoms.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; rare.

Cristellaria lata, Cornuel, sp. (Plate XVI, fig. 4.)

Marginulina lata, Cornuel, 1848, Mém. Soc. Géol. France, sér. 2, vol. iii, p. 252, pl. i, figs. 34-37. *Cristellaria lata*, Cornuel sp., Brady, 1884, Rep. Chall., vol. ix, p. 539, pl. lxvii, figs. 18 a, b.

Distribution.—The only previously recorded locality for this species as a Recent form is off East Moncoeur Island, Bass Strait; 38 fathoms.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; frequent.

Cristellaria compressa, d'Orbigny. (Plate XVI, fig. 5.)

Cristellaria compressa, d'Orbigny, 1846, Foram. Foss. Vienne, p. 86, pl. iii, figs. 32, 33. *C. compressa*, d'Orb., Brady, 1884, Rep. Chall., vol. ix, p. 538, pl. cxiv, figs. 15, 16.

Distribution.—Recorded from the North Atlantic and the New Zealand area by the "Challenger." Not uncommon as a Tertiary fossil.

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; rare.

Cristellaria variabilis, Reuss.

Cristellaria variabilis, Reuss, 1849, Denkschr. k. Akad. Wiss. Wien, vol. i, p. 369, pl. xlvi, figs. 15, 16. *C. variabilis*, Rss., Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv, p. 62, pl. x, figs. 593-595. *C. variabilis*,

Rss., Millett, 1903, Journ. R. Micr. Soc., p. 256, pl. v, fig. i. *C. variabilis*, Rss., Sidebottom, 1907, Mem. & Proc. Manch. Lit. & Phil. Soc., vol. li, pt. iii, p. 8, pl. ii, fig. 3.

Our specimens show all stages between the extremes, of those with rounded back and those with well-developed carinate periphery.

Distribution.—This species, which is also a Miocene and Pliocene fossil, has been recorded from the North and South Atlantic and the North and South Pacific by Dr. H. B. Brady; Egger had it from the west coast of Africa, the Mauritius, and off Western Australia; Goës, from the Atlantic; Flint, from the Caribbean Sea, North Atlantic, and Gulf of Mexico; Millett, from the Malay Archipelago; and Sidebottom, from the Island of Delos and Palermo.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; very rare.

Cristellaria articulata, Reuss sp.

Robulina articulata, Reuss, 1863, Sitzungsab. d. k. Ak. Wiss. Wien, vol. xlvi, p. 53, pl. v, fig. 62. *Cristellaria articulata*, Rss. sp., Brady, 1884, Rep. Chall., vol. ix, p. 547, pl. lxxix, figs. 10-12; wild-growing form, fig. 14.

This species is a fossil in the Oligocene clays of Germany.

Distribution.—Brady records this species from Culebra Island, West Indies, at 390 fathoms; and off Nightingale Island, Tristan da Cunha, 100-150 fathoms. Dr. Flint obtained it from the Gulf of Mexico and the Atlantic, at 169-276 fathoms. It was also found to be rather common in soundings off Great Barrier Island, New Zealand, by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island, 85 fathoms; rare.

Cristellaria gibba, d'Orbigny.

Cristellaria gibba, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 292, No. 17; *id.*, 1839, Foram. Cuba, p. 40, pl. vii, figs. 20, 21. *C. gibba*, d'Orb., Fornasini, 1894, Mem. R. Accad. Sci. Ist. Bologna, ser. 5, vol. iv, p. 221, pl. iii, fig. 20.

Distribution.—North Atlantic and South Pacific (Brady); Mediterranean (Silvestri); the Mauritius, off Western Australia, and New Guinea (Egger); Gulf of Mexico (Flint); Malay Archipelago (Millett).

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; frequent.

Cristellaria reniformis, d'Orbigny.

Cristellaria reniformis, d'Orbigny, 1846, Foram. Foss. Vienne, p. 88, pl. iii, figs. 39, 40. *C. reniformis*, d'Orb., Brady, 1884, Rep. Chall., vol. ix, p. 539, pl. lxx, figs. 3 a, b.

Distribution.—Brady records this form from the North and South Atlantic and the North and South Pacific, and it was later recorded by the "Challenger" from the New Zealand area. The writer found a single example off Great Barrier Island, New Zealand. It seems to particularly affect moderately deep water.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

***Cristellaria cultrata*, Montfort sp. (Plate XVI, fig. 6.)**

Robulus cultratus, Montfort, 1808, Conchyl. Systém, vol. i, p. 214, 54^e genre. *Cristellaria cultrata*, Montf. sp., Brady, 1884, Rep. Chall., vol. ix, p. 550, pl. lxx, figs. 4-6; dentate var., figs. 7, 8. *C. cultrata*, Montf. sp., Egger, 1893, Abhandl. k. bayer. Ak. Wiss., cl. ii, vol. xviii, p. 352, pl. xii, figs. 7-10, 24, 25.

Distribution.—Having a very wide range. Recorded by the "Challenger" from the New Zealand area, and by the writer from Great Barrier Island.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; very rare. Off the Snares; 60 fathoms; frequent; one specimen with dentate carina. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; common.

***Cristellaria rotulata*, Lamarck sp.**

Lenticulites rotulata, Lamarck, 1804, "Annales du Muséum," vol. v, p. 188, No. 3; Tableau Encycl. et Méthodique, pl. cccclxvi, fig. 5. *Cristellaria rotulata*, Lam. sp., Brady, 1884, Rep. Chall., vol. ix, p. 547, pl. lxix, figs. 13 a, b. *C. rotulata*, Lam. sp., Flint, 1899, Rep. of U.S. Nat. Mus. for 1897, p. 314, pl. lxiv, fig. 4. *C. rotulata*, Lam. sp., Chapman, 1900, Proc. Calif. Acad. Sci., ser. 3, Geol., vol. i, p. 251, pl. xxx, fig. 4.

Distribution.—A cosmopolitan species. Obtained by the "Challenger" from the New Zealand area, and by the writer from Great Barrier Island.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; very rare.

***Cristellaria vortex*, Fichtel and Moll sp.**

Nautilus vortex, Fichtel and Moll, 1798, Test. Micr., p. 33, pl. ii, figs. d-i. *Cristellaria vortex*, F. & M. sp., Brady, 1884, Rep. Chall., vol. ix, p. 548, pl. lxix, figs. 14-16. *C. vortex*, F. & M. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 317, pl. lxv, fig. 1.

Distribution.—Brady records this form from the west coast of Scotland, North Atlantic, and the South Pacific; Dr. Flint had it from the North Atlantic and Caribbean Sea; and Parker and Jones from the Mediterranean.

Present Occurrence.—Off the Snares; 60 fathoms; very rare.

Cristellaria orbicularis, d'Orbigny sp.

Robulina orbicularis, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 288, pl. xv, figs. 8, 9. *Cristellaria orbicularis*, d'Orb., Brady, 1884, Rep. Chall., vol. ix, p. 549, pl. lxxix, fig. 17. *C. orbicularis*, d'Orb. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 317, pl. lxxiv, fig. 3.

Distribution.—Dr. Brady notes this form from one station in the North Atlantic, and from five in the South Pacific, including a station off the west coast of New Zealand, at 150 fathoms; Dr. Flint records it from the Gulf of Mexico; also from Great Barrier Island, New Zealand, by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; common.

Subfam. POLYMORPHININAE.

Genus POLYMORPHINA, d'Orbigny, 1826.

Polymorphina lactea, Walker and Jacob sp.

Serpula lactea, Walker and Jacob (*vide* Kanmacher), 1798, "Adams's Essays," 2nd ed., p. 634, pl. xiv, fig. 4. *Polymorphina lactea*, W. & J. sp., Brady, Parker and Jones, 1870, Trans. Linn. Soc. Lond., vol. xxvii, p. 213, pl. xxxix, figs. 1, *a-c*. *P. lactea*, W. & J. sp., Brady, 1884, Rep. Chall., vol. ix, p. 559, pl. lxxi, fig. 11.

Distribution.—A common form in shallow water. Occasionally found at considerable depths, but always of smaller size than in typical specimens. It occurs on nearly all shore-lines. Dr. Brady states that its southern limit appears to be the Cape of Good Hope.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

Polymorphina lactea, W. & J. sp., fistulose var. **diffusa**, Jones and Chapman. (Plate XVI, fig. 7.)

Polymorphina lactea, W. & J. sp., var. *diffusa*, Jones and Chapman, 1896, Journ. Linn. Soc. Lond., Zool., vol. xxv, pp. 499, 505, fig. 28. *P. lactea*, W. & J. sp., var. *diffusa*, Jones & Chapm., Chapman, 1907, Journ. Quekett Micr. Club, p. 131, pl. x, fig. 1.

This is a fistulose variety of the typical form, in which the tubular outgrowths are scattered over the surface of the test. The original figure is based on that of a specimen illustrated by Terquem, and occurring in the Pliocene of the Isle of Rhodes.*

Distribution.—This variety is likely to occur wherever the type form is found. It was recently found by the writer in shore-sand at Torquay, near Geelong, Victoria.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; one example.

* "*Polymorphina solidula*," Mém. Soc. Géol. France, sér. 3, vol. i, No. 3, 1878, p. 40, pl. iii (viii), fig. 33.

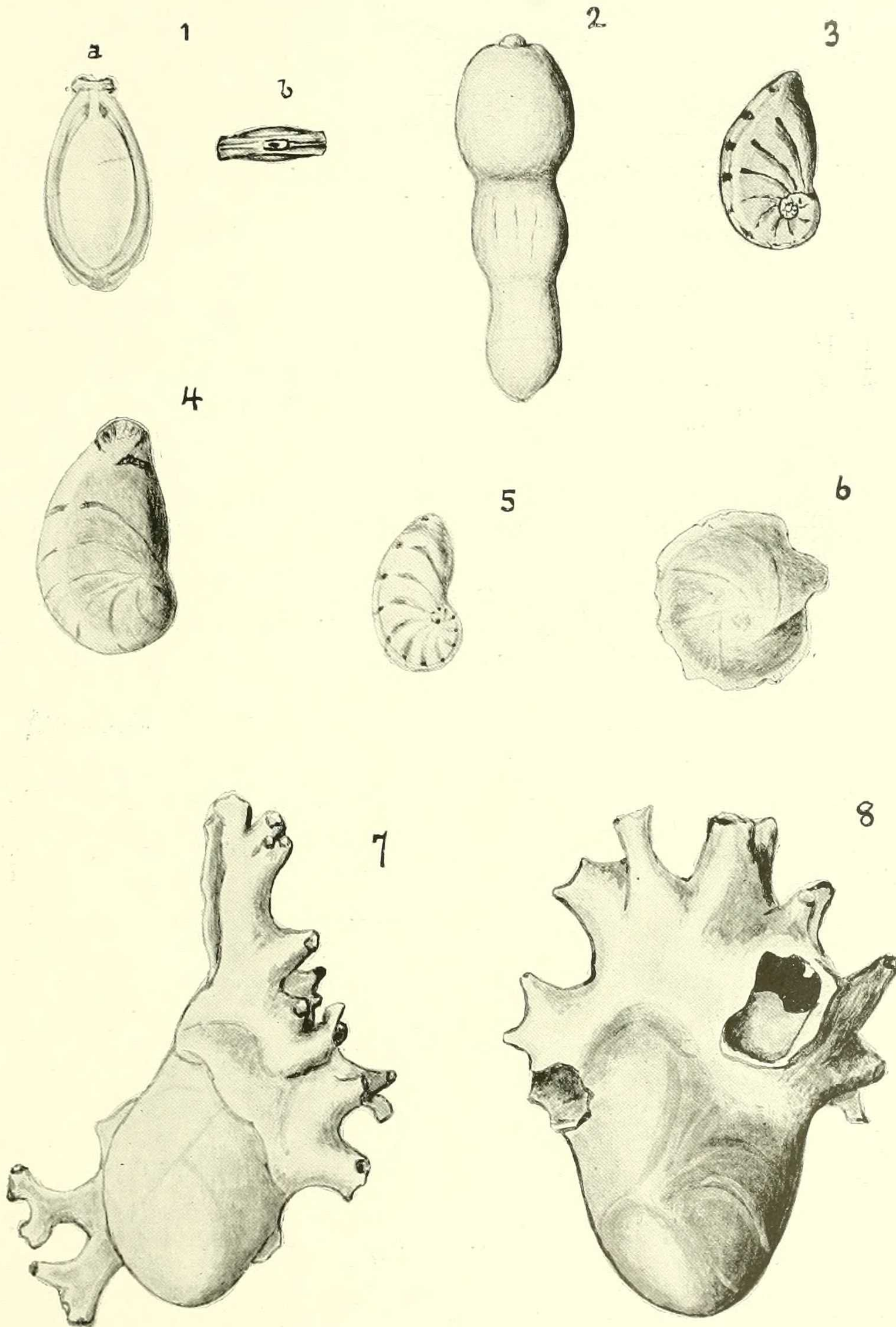


PLATE XVI.

X 36.

Polymorphina lactea, W. & J. sp., fistulose var. **racemosa**, Jones and Chapman.
(Plate XVI, fig. 8.)

Polymorphina lactea, W. & J., sp., var. *racemosa*, Jones and Chapman, 1896,
Journ. Linn. Soc. Lond., Zool., vol. xxv, pp. 497, 504, fig. 20.

This variety has the fistulose outgrowths confined to the oral extremity.

Distribution.—Probably coextensive with the species.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; one example.

Polymorphina gibba, d'Orbigny.

Polymorphina (Globulina) gibba, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii,
p. 266, No. 20; modèle No. 63. *P. gibba*, d'Orb., Brady, 1884, Rep.
Chall., vol. ix, p. 561, pl. lxxi, figs. 12 a, b.

Distribution.—A widely distributed form.

Present Occurrence.—Off the Snares; 60 fathoms; rare.

Polymorphina gibba, d'Orbigny, fistulose var. **racemosa**, Jones and Chapman.
(Plate XVII, fig. 1.)

Polymorphina gibba, d'Orb., var. *racemosa*, Jones and Chapman, 1896,
Journ. Linn. Soc. Lond., Zool., vol. xxv, pp. 497, 504, figs. 17, 18.

Distribution.—Probably coextensive with the species.

Present Occurrence.—Off the Snares; 60 fathoms; one example.

Polymorphina communis, d'Orbigny.

Polymorphina (Guttulina) communis, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii,
p. 266, pl. xii, figs. 1-4; modèle No. 62. *P. communis*, d'Orb., Jones,
1895, Palaeont. Soc. Mon., Crag. Foram., p. 265, pl. v, fig. 24; pl. vi,
fig. 16.

Distribution.—A well-known form in almost every recent foraminiferal dredging from shallow water to moderate depths. Dr. Brady records its greatest depth as 155 fathoms. One of Dr. Flint's samples with this species came from off the coast of Georgia, at 276 fathoms.

Present Occurrence.—Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; frequent.

Polymorphina compressa, d'Orbigny.

Polymorphina compressa, d'Orbigny, 1846, Foram. Foss. Vienne, p. 233,
pl. xii, figs. 32-34. *P. compressa*, d'Orb., Egger, 1893, Abhandl. k.
bayer. Akad. Wiss., cl. ii, vol. xviii, p. 309, pl. ix, figs. 11-13.

Distribution.—Dr. Brady mentions this species as of more frequent occurrence in the temperate portion of the North Atlantic. It is occasionally found in the North and South Pacific.

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; rare.

Polymorphina oblonga, d'Orbigny.

Polymorphina oblonga, d'Orbigny, 1846, *Foram. Foss. Vienne*, p. 232, pl. xii, figs. 29–31. *P. oblonga*, d'Orb., Flint, 1899, *Rep. U.S. Nat. Mus.* for 1897, p. 319, pl. lxxvii, fig. 5. *P. oblonga*, d'Orb., Sidebottom, 1907, *Mem. & Proc. Manch. Lit. & Phil. Soc.*, vol. li, No. 9, p. 12, pl. ii, fig. 20.

Our examples are quite typical.

Distribution.—Widely distributed.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; frequent.

Polymorphina elegantissima, Parker and Jones.

Polymorphina elegantissima, Parker and Jones, 1864, *Phil. Trans.*, vol. clv, table x, p. 438. *P. elegantissima*, P. & J., Brady, Parker and Jones, 1870, *Trans. Linn. Soc.*, vol. xxvii, p. 231, pl. xl, fig. 15.

This species is a typical one in the Australasian Tertiary deposits, and it has persisted in the Southern Ocean to the present time.

Distribution.—Brady states that it appears to be confined to the shores of the Pacific, and is best known from Australian specimens. It has been found as far north as Hong Kong Harbour.

Present Occurrence.—Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; very common.

Genus UVIGERINA, d'Orbigny, 1826.

Uvigerina angulosa, Williamson.

Uvigerina angulosa, Williamson, 1858, *Rec. Foram. Gt. Brit.*, p. 67, pl. v, fig. 140. *U. angulosa*, Will., Brady, 1884, *Rep. Chall.*, vol. ix, p. 576, pl. lxxiv, figs. 15–18.

The specimens vary greatly. They are generally small. Some of the shorter forms have a few aboral spines, such as distinguish the variety *spinipes* of Brady, and which was recorded from only one station by the "Challenger"—viz., off Nightingale Island, Tristan da Cunha.

Distribution.—Widely dispersed. Ranging from the North Atlantic to the antarctic ice-barrier. Recorded from the New Zealand area in the "Challenger" Reports.

Present Occurrence.—Perseverance Harbour, Campbell Islands; 8 fathoms; very rare. North-east of Bounty Island; 50 fathoms; common. Off the Snares; 60 fathoms; frequent. Twenty miles north of Auckland Island; 85 fathoms; very common. Ten miles north of Enderby Island; 85 fathoms; very common.

Fam. GLOBIGERINIDAE.

Genus GLOBIGERINA, d'Orbigny, 1826.

Globigerina bulloides, d'Orbigny.

Globigerina bulloides, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 277, No. 1; modèles Nos. 17 and 76; *idem*, 1846, Foram. Foss. Vienne, p. 163, pl. ix, figs. 4-6.

Some of our specimens resemble *G. dubia* (of Chall. Rep., non Egger) or *G. eggeri* of Rhumbler,* but no sharp distinction can be drawn to separate the two forms in our series.†

Distribution.—A cosmopolitan pelagic form. Obtained by the "Challenger" from the New Zealand area, and off Great Barrier Island by the writer.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; frequent; small. Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; very common. Ten miles north of Enderby Island; 85 fathoms; frequent.

Globigerina triloba, Reuss.

Globigerina triloba, Reuss, 1849, Denkschr. Akad. k. d. Wiss. Wien, vol. i, p. 374, pl. xlvii, fig. 11 a-e. *G. bulloides*, var. *triloba*, Rss., Brady, 1884, Rep. Chall., vol. ix, p. 595, pl. lxxix, figs. 1, 2; pl. lxxxix, figs. 2, 3.

Distribution.—Coextensive with the preceding species. Obtained by the "Challenger" from the New Zealand area, and off Great Barrier Island by the writer.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; very rare. Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

Globigerina dutertrei, d'Orbigny.

Globigerina dutertrei, d'Orbigny, 1839, Foram. Cuba, p. 95, pl. iv, figs. 19-21.

It is remarkable that the above species should only be represented by a few ill-developed examples, seeing that it is a characteristic form in antarctic foraminiferal dredgings.

Distribution.—Although typically an antarctic form, this species has also been recorded from the South Pacific and the West Indies.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; very rare. Off the Snares; 60 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

Globigerina inflata, d'Orbigny.

Globigerina inflata, d'Orbigny, 1839, Foram. Cuba, p. 134, pl. ii, figs. 7-9.

G. inflata, d'Orb., Fornasini, 1899, Mem. R. Accad. Sci. Ist. Bologna, ser. 5, vol. vii, p. 577, pl. i, fig. 3.

* In Karl Brandt's "Nordisches Plankton," 1900, heft 14, p. 19, fig. 20.

† See also Millett, 1903, Journ. R. Micr. Soc., p. 686.

Distribution.—Having a wide geographical range. Brady says that it is less common in the Arctic and Southern Oceans than elsewhere. Obtained from the New Zealand area by the “Challenger,” and off Great Barrier Island by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; very common. Ten miles north of Enderby Island; 85 fathoms; very rare, small.

Globigerina aequilateralis, Brady.

Globigerina aequilateralis, Brady, 1884, Rep. Chall., vol. ix, p. 605, pl. lxxx, figs. 18–21. *G. aequilateralis*, Brady, Rhumbler, 1900, in Dr. Karl Brandt’s “Nordisches Plankton,” heft 14, p. 20, figs. 21–23.

Distribution.—Having a fairly wide range. Obtained from the New Zealand area by the “Challenger,” and off Great Barrier Island, where it was rare, by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; very rare

Genus ORBULINA, d’Orbigny, 1839.

Orbulina universa, d’Orbigny.

Orbulina universa, d’Orbigny, 1839, Foram. Cuba, p. 3, pl. i, fig. 1. *O. universa*, d’Orb., Rhumbler, 1900, in Dr. Karl Brandt’s “Nordisches Plankton,” heft 14, p. 27, figs. 27–30.

Distribution.—Widely distributed. Obtained from the New Zealand area by the “Challenger,” and off Great Barrier Island by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; common. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; very common.

Genus SPHAEROIDINA, d’Orbigny, 1826.

Sphaeroidina bulloides, d’Orbigny.

Sphaeroidina bulloides, d’Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 267, No. 1; modèle No. 65. *S. bulloides*, d’Orb., Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv, p. 87, pl. xiv, fig. 770.

The examples here met with are small, and have a peculiarly rough test, almost simulating *Globigerina conglobata*; the aperture, however, serves to distinguish the form generically.

Distribution.—This species has a wide geographical range. The “Challenger” obtained it from the New Zealand area, and it has also occurred off Great Barrier Island at 110 fathoms.

Present Occurrence.—Perseverance Harbour, Campbell Islands; 8 fathoms; very rare. Off the Snares; 60 fathoms: very rare.

Genus CANDEINA, d'Orbigny, 1839.

Candeina nitida, d'Orbigny.

Candeina nitida, d'Orbigny, 1839, Foram. Cuba, p. 108, pl. ii, figs. 27, 28.

C. nitida, d'Orb., Millett, 1903, Journ. R. Micr. Soc., p. 692, pl. vii, fig. 2.

Distribution.—Widely dispersed.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; common.

Fam. ROTALIIDAE.

Subfam. SPIRILLININAE.

Genus SPIRILLINA, Ehrenberg, 1841.

Spirillina vivipara, Ehrenberg.

Spirillina vivipara, Ehrenberg, 1841, Abandl. k. Akad. Wiss. Berlin, p. 422, pl. iii, vii, fig. 41. *S. vivipara*, Ehr., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 326, pl. lxxi, fig. 4.

The present examples are of moderate size, and typical.

Distribution.—Geographically unrestricted. Both Brady and Egger record it as far south as Kerguelen Island. Curiously, no examples of the genus *Spirillina* have hitherto been recorded from the New Zealand area.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island, 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; common.

Spirillina obconica, Brady.

Spirillina obconica, Brady, 1879, Quart. Journ. Micr. Sci., vol. xix, n.s., p. 279, pl. viii, figs. 27 *a*, *b*.

The examples found are minute, and beautifully transparent.

Distribution.—Brady gives three localities for this species—viz., off Prince Edward Island, Kerguelen Island, and Admiralty Islands.

Present Occurrence.—Off the Snares; 60 fathoms; rare.

Spirillina novae-zealandiae, sp. nov. (Plate XVII, figs. 4 *a*, *b*, and 5.)

Description.—Test thick; suture more or less obscured, according to age; periphery rounded, and often longitudinally lineated with secondary shell-growth; surface abundantly perforated with coarse pores and surrounded with supplementary shell-deposit.

Diameter of larger figured specimen, 1.36 mm.; thickness, 0.28 mm.

Remarks.—This species differs from *S. vivipara* in the thick test, coarse pores, indistinct sutures, and well-rounded periphery. At first sight it might be mistaken for *S. tuberculata*, Brady,* since the pores under certain illumination seem to appear

* Rep. Chall., vol. ix, 1884, p. 631, pl. lxxxv, figs. 12–16.

as tubercles, owing to a thin, irregular deposit of secondary shell-substance around them. This form is by far the commonest of the genus in the present series.

Occurrence.—Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; frequent.

Spirillina inaequalis, Brady.

Spirillina inaequalis, Brady, 1879, Quart. Journ. Micr. Sci., vol. xix, n.s., p. 278, pl. viii, fig. 25. *S. inaequalis*, Brady, Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 394, pl. xviii, figs. 40–42.

Distribution.—Previously recorded from the islands of the Pacific, and from the Mauritius, and Western Australia.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; one example.

Spirillina decorata, Brady.

Spirillina decorata, Brady, 1884, Rep. Chall., vol. ix, p. 633, pl. lxxxv, figs. 22–25. *S. decorata*, Brady, Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 394, pl. xviii, figs. 64, 65.

Distribution.—Brady records this species from the South Pacific, among other localities; Egger obtained it from west Africa, the Mauritius, and Western Australia; Millett found it in the Malay Archipelago.

Present Occurrence.—Off the Snares; 60 fathoms; one fine example.

Spirillina spinigera, Chapman.

Spirillina spinigera, Chapman, 1900, Journ. Linn. Soc. Lond., Zool., vol. xxviii, p. 10, pl. i, figs. 7 a–c; *idem, ibid.*, 1901, vol. xxviii, p. 188, pl. xix, figs. 9, 10. *S. decorata*, Brady var., Sidebottom, 1908, Mem. & Proc. Manch. Lit. & Phil. Soc., vol. lii, pt. iii, p. 8, pl. ii, fig. 6.

Our specimen bears a few peripheral spines, and is quite typical in other respects. Mr. Sidebottom refers this form to *S. decorata*, to which it certainly bears some alliance; it has, however, the constant character of being plano-convex, whilst *S. decorata* is typically biconvex.

Distribution.—This interesting little form was originally described from Funafuti, where it occurred both in the lagoon (7½ fathoms) and outside the atoll (32 to 200 fathoms). It was also found in the boring in the lagoon at 62 ft. below the floor. Mr. Sidebottom's specimens are recorded from the Island of Delos, and from Raine's Islet, Torres Strait.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; one example.

Spirillina limbata, Brady.

Spirillina limbata, Brady, 1879, Quart. Journ. Micr. Sci., vol. xix, n.s., p. 278, pl. viii, fig. 26. *S. limbata*, Brady, Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 395, pl. xviii, figs. 43, 44.

The examples in the present series are generally typical, but there is a tendency for some of the specimens to vary towards *S. inaequalis*, Brady.

Distribution.—This species has a wide geographical range.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; very rare; small. Off the Snares; 60 fathoms; frequent; of variable size. Ten miles north of Enderby Island; 85 fathoms; very rare; small.

Spirillina limbata, var. denticulata, Brady. (Plate XVII, fig. 2.)

Spirillina limbata, var. denticulata, Brady, 1884, Rep. Chall., vol. ix, p. 632, pl. lxxxv, fig. 17.

Distribution.—This variety appears to be restricted to the Southern Hemisphere.

Present Occurrence.—Off the Snares; 60 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; rare.

Spirillina denticulo-granulata, Chapman. (Plate XVII, figs. 3 *a, b*.)

Spirillina denticulo-granulata, Chapman, 1907, Journ. Quekett Micr. Club, ser. 2, vol. x, p. 133, pl. x, figs. 6 a-c.

Distribution.—A form of *Spirillina* probably referable to this species has been recorded by Mr. Millett from the Tertiary (Pliocene) deposits of St. Erth, Cornwall*; and the present writer has described it from shore-sand at Torquay, near Geelong, Victoria.

Present Occurrence.—Off the Snares; 60 fathoms; rare.

Subfam. ROTALIINAE.

Genus PATELLINA, Williamson, 1858.

Patellina corrugata, Williamson.

Patellina corrugata, Williamson, 1858, Rec. Foram. Gt. Brit., p. 46, pl. iii, figs. 86-89. P. corrugata, Will., Wright, 1900, Geol. Mag., n.s., Dec. 4, vol. vii, p. 100, pl. v, fig. 20. P. corrugata, Will., Chapman, 1907, Journ. Quekett Micr. Club, ser. 2, vol. x, p. 134, pl. x, fig. 7.

Distribution.—Its geographical range is very wide. *P. corrugata* has lately been recorded from the Victorian littoral, and the writer has also found it in several samples of Victorian Tertiary (Miocene) deposits. Haeusler has recorded this species from the Hauraki Gulf, New Zealand.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; common.

Genus DISCORBINA, Parker and Jones, 1862.

Discorbina turbo, d'Orbigny sp.

Rotalia (Trochulina) turbo, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 274, No. 39; modèle No. 73. Discorbina turbo, d'Orb. sp., Jones, 1895, Pal. Soc. Mon., Crag. Foram., p. 291, pl. vii, fig. 29. D. turbo, d'Orb. sp., Millett, 1903, Journ. R. Micr. Soc., p. 697.

* Journ. R. Micr. Soc., 1903, p. 694.

The majority of our specimens are typical, but a few form connecting-links with *D. rosacea*, after the manner observed by Mr. Millett in his series from the Malay Archipelago.

Distribution.—The present record is the farthest south of any yet made. The “Challenger” obtained it from the Cape de Verde Islands; off Ascension Island; off the coast of South America, near Pernambuco; and from Port Jackson. Dr. Brady further records it from Bermuda, and Port Stephen, New South Wales. Dr. Egger notes it from the Mauritius. Dr. Haeusler found it in shallow water in the Hauraki Gulf, New Zealand.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; rare. Off the Snares; 60 fathoms; very rare. Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; common.

Discorbina globularis, d’Orbigny sp.

Rosalina globularis, d’Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 271, pl. xiii, figs. 1-4; modèle No. 69. *Discorbina globularis*, d’Orb. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 327, pl. lxxii, fig. 2.

Distribution.—Dr. Brady refers to this species as the commonest of the genus. It has a wide distribution, and was recorded as far south as the Magellan Strait by the “Challenger.” Dr. Haeusler has noted it from the Hauraki Gulf, New Zealand.

Present Occurrence.—Off the Snares; 60 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; very rare.

Discorbina rosacea, d’Orbigny sp.

Rotalia rosacea, d’Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 273, No. 15. *Discorbina rosacea*, d’Orb. sp., Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv, p. 94, pl. xv, fig. 792.

Distribution.—A common form in shallow to moderately shallow water. It is widely distributed, and was recorded by the “Challenger” as far south as the Straits of Magellan. Dr. Haeusler has obtained it from the Hauraki Gulf, New Zealand.

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; frequent.

Discorbina patelliformis, Brady.

Discorbina patelliformis, Brady, 1884, Rep. Chall., vol. ix, p. 647, pl. lxxxviii, fig. 3; pl. lxxxix, fig. 1. *D. patelliformis*, Brady, Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 390, pl. xv, figs. 48-50. *D. patelliformis*, Brady, Sidebottom, 1908, Mem. & Proc. Manch. Lit. & Phil. Soc., vol. lii, p. 14, pl. v, fig. 3.

Distribution.—More numerous in the Southern Hemisphere. Amongst other places, it has been recorded from the islands of the Pacific and off Western Australia.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

Discorbina bertheloti, d'Orbigny sp.

Rosalina bertheloti d'Orbigny, 1839, Foram. Canaries, p. 135, pl. i, figs. 28-30. *Discorbina bertheloti*, d'Orb. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 327, pl. lxxii, fig. 4.

Distribution.—Widely distributed. Brady records the most southerly locality at the south-east corner of Australia.

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; common.

Discorbina bertheloti, d'Orb. sp., var. **baconica**, Hantken.

Discorbina baconica, Hantken, 1875, Mittheil, Jahrb. d. k. Ung. Geol. Anstalt, vol. iv, p. 76, pl. x, figs. 3 a, b. *D. bertheloti*, d'Orb. sp., var. *baconica*, Hantken, Brady, 1884, Rep. Chall., vol. ix, p. 651, pl. xc, figs. 1 a-c.

Distribution.—This variety, which was described from a Tertiary fossil example, has been recorded only from two localities, in the North Atlantic.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; rare; small.

Discorbina araucana, d'Orbigny sp.

Rosalina araucana, d'Orbigny, 1839, Foram. Amér. Mérid., p. 44, pl. vi, figs. 16-18. *Discorbina araucana*, d'Orb., sp., Brady, 1884, Rep. Chall., vol. ix, p. 645, pl. lxxxvi, figs. 10, 11.

Distribution.—Brady states that this form and the nearly related *D. vilardeboana* "occurs in shallow water at almost every latitude from the shores of Japan to Kerguelen Island, and the coast of Patagonia."

Present Occurrence.—Off the Snares; 60 fathoms; one example.

Discorbina parisiensis, d'Orbigny sp. (Plate XVII, figs. 6, 7.)

Rosalina parisiensis, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 271, No. 1; modèle No. 38. *Discorbina parisiensis*, d'Orb. sp., Egger, 1893, Abhandl. k. bay. Akad. Wiss., cl. ii, vol. xviii, p. 391, pl. xv, figs. 25-30.

This is the commonest species of the genus in the present material. More than 50 per cent. of the specimens are in the condition of plastogamic conjugation, forming "double specimens"; as also exemplified in *D. tabernacularis* and *D. pileolus*. Our shells are generally more conical than the usual type of *D. parisiensis*, and in this they resemble the tests of *D. pileolus*. The retrorse form of the sutures, however, show this form to be referable to *D. parisiensis*.

Distribution.—The "Challenger" obtained it from Kerguelen Island, and it has also occurred off the coast of Ireland (Wright), and the Atlantic shores of France (Berthelin). Egger obtained it from Kerguelen, the Mauritius, between New Amsterdam and Australia, and off Western Australia.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; common. Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; very common.

Discorbina allomorphinoides, Reuss. sp.

Valvulina allomorphinoides, Reuss, 1860, Sitzungsber. d. k. Ak. Wiss. Wien, vol. xl, p. 223, pl. xi, fig. 6. *Discorbina allomorphinoides*, Reuss. sp., Brady, 1884, Rep. Chall., vol. ix, p. 654, pl. xci, figs. 5, 8.

Distribution.—Brady records this form from three localities—viz., off the Philippines, off Raine Island, and at Port Jackson. Millett mentions it as having occurred in the Malay Archipelago and off Korea. It has also been found off Dunkerque (Terquem), and in the Adriatic (Fornasini).

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; one small example.

Discorbina rarescens, Brady.

Discorbina rarescens, Brady, 1884, Rep. Chall., vol. ix, p. 651, pl. xc., figs. 2, 3, ? 4. *D. rarescens*, Brady, Egger, 1893, Abhandl. k. Bayer. Akad. Wiss., cl. ii, vol. xviii, p. 388, pl. xv, figs. 45–47.

Distribution.—Raine Island and off the Philippines (Brady); west Africa and Western Australia (Egger).

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

Discorbina biconcava, Parker and Jones. (Plate XVII, figs. 8 *a*, *b*.)

Discorbina biconcava, Parker and Jones, 1865, Phil. Trans., vol. clv, p. 422, pl. xix, figs. 10 *a*–*c*. *D. biconcava*, P. & J., Brady, 1884, Rep. Chall., vol. ix, p. 653, pl. xci, figs. 2, 3. *D. biconcava*, P. & J., Egger, 1893, Abhandl. k. Bayer. Akad. Wiss., cl. ii, vol. xviii, p. 393, pl. xviii, figs. 45–47.

Distribution.—Commonest in the Australian area, having been found by the “Challenger” in Bass Strait, Port Jackson, and off Raine Island. Egger found it off New Guinea. It has also been recorded from Melbourne, and from Storm Bay, Tasmania. Of other widely separated localities may be mentioned the Dee Estuary, England (Siddall), and the Gulf of Mexico (Flint).

Present Occurrence.—Off the Snares; 60 fathoms; one example.

Genus TRUNCATULINA, d'Orbigny, 1826.

Truncatulina refulgens, Montfort sp.

Cibicides refulgens, Montfort, 1808, Conch. Syst., vol. i, p. 122, 31^e genre. *Truncatulina refulgens*, Montfort sp., Egger, 1893, p. 401, pl. xvi, figs. 31–33. *T. refulgens*, Montf. sp., Chapman, 1898, Journ. R. Micr. Soc., p. 1, pl. i, fig. 1.

Distribution.—Found in the North Atlantic; also in the temperate zone of the Southern Hemisphere (Brady). This is its first occurrence in the New Zealand area.

Present Occurrence.—Twenty miles north of Auckland Island; 85 fathoms; rare; typical. Ten miles north of Enderby Island; 85 fathoms; very rare.

Truncatulina lobatula, Walker and Jacob sp.

Nautilus lobatulus, Walker and Jacob, "Adams's Essays," Kanmacher's ed., p. 642, pl. xiv, fig. 36. *Truncatulina lobatula*, W. & J. sp., Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 396, pl. xvi, figs. 1-3, 10-12. *T. lobatula*, W. & J. sp., Chapman, 1902, Proc. Roy. Soc. Edin., vol. xxiii, p. 392, pl. i, figs. 2, 3.

Distribution.—A very common form, and most widely distributed. *T. lobatula* was obtained by the "Challenger" from the east coast of New Zealand, and the writer has recorded it from Great Barrier Island.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; frequent. Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; very common. Ten miles north of Enderby Island; 85 fathoms; very common.

Truncatulina variabilis, d'Orbigny

Truncatulina variabilis, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 279, No. 8. *T. variabilis*, d'Orbigny, Jones, 1896, Pal. Soc. Mon., Crag. Foram., p. 309, pl. vi, fig. 23.

Distribution.—A well-known wild-growing form in most shallow-water areas, and occasionally found in deeper water. It was recorded for the first time from the New Zealand area by the writer, off Great Barrier Island, 110 fathoms.

Present Occurrence.—Perseverance Harbour, Campbell Islands; 8 fathoms; frequent; examples with thin tests. North-east of Bounty Island; 50 fathoms; rare. Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; very common. Ten miles north of Enderby Island; 85 fathoms; very common.

Truncatulina tenuimargo, Brady.

Truncatulina tenuimargo, Brady, 1884, Rep. Chall., vol. ix, p. 662, pl. xciii, figs. 2, 3. *T. tenuimargo*, Brady, Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 399, pl. xvi, figs. 7-9. *T. tenuimargo*, Brady, Chapman, 1906, Trans. N.Z. Inst., vol. xxxviii, p. 102.

Distribution.—This is never a common form. It is known from the South Atlantic and the Pacific. Recorded by Dr. Brady from the shores of New Zealand, but not noted in Hutton's "Index Faunae Novae-Zealandiae." Dr. Egger found it at Kerguelen, amongst other localities. It was also found in dredgings off Great Barrier Island by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; frequent.

Truncatulina wuellerstorfi, Schwager sp.

Anomalina wuellerstorfi, Schwager, 1866, "Novara" Exped., geol. Theil, vol. ii, p. 258, pl. vii, fig. 105. *Truncatulina wuellerstorfi*, Schw. sp., Chapman, 1906, Trans. N.Z. Inst., vol. xxxviii, p. 102.

It was not to be expected that this form would be common here, since it is usually found at a greater depth than 100 fathoms. The examples met with are variable in size and evenness of contour.

Distribution.—It was obtained by the "Challenger" from the New Zealand area, and from Great Barrier Island by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; frequent. Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

***Truncatulina ungeriana*, d'Orbigny sp.**

Rotalina ungeriana, d'Orbigny, 1846, *Foram. Foss. Vienne*, p. 157, pl. viii, figs. 16–18. *Truncatulina ungeriana*, d'Orb. sp., Flint, 1899, *Rep. U.S. Nat. Mus. for 1897*, p. 333, pl. lxxvii, fig. 2.

Distribution.—Previously found off Great Barrier Island by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; frequent.

***Truncatulina reticulata*, Czjzek sp.**

Rotalina reticulata, Czjzek, 1848, *Haidinger's Naturw. Abhandl.*, vol. ii, p. 145, pl. xiii, figs. 7–9. *Truncatulina reticulata*, Cz. sp., Flint, 1899, *Rep. U.S. Nat. Mus. for 1897*, p. 334, pl. lxxviii, fig. 3. *T. reticulata*, Cz. sp., Chapman, 1906, *Trans. N.Z. Inst.*, vol. xxxviii, p. 102.

Distribution.—In the Southern Hemisphere it has been found at various stations in the Pacific and off the south coast of Australia. Recorded by the writer from Great Barrier Island, at 110 fathoms. It is also found fossil in the lower and upper beds at Muddy Creek, Victoria.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; one example.

***Truncatulina haidingeri*, d'Orbigny sp.**

Rotalina haidingeri, d'Orbigny, 1846, *Foram. Foss. Vienne*, p. 154, pl. viii, figs. 7–9. *Truncatulina (Rotalina) haidingeri*, d'Orb. sp., Egger, 1893, *Abhandl. k. bayer. Akad. Wiss.*, cl. ii, vol. xviii, p. 401, pl. xvi, figs. 25–27.

The specimen now found is not typical, having a test more depressed than usual and a larger umbilicus on the inferior face.

Distribution.—Recorded previously from Great Barrier Island by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; one example.

Genus ANOMALINA, d'Orbigny, 1826.

***Anomalina grosserugosa*, Gümbel sp. (Plate XVII, fig. 9.)**

Truncatulina grosserugosa, Gümbel, 1868, *Abhandl. d. k. bayer. Akad. Wiss.*, cl. ii, vol. x, p. 660, pl. ii, figs. 104 *a, b*. *Anomalina grosserugosa*, Gümbel sp., Brady, 1884, *Rep. Chall.*, vol. ix, p. 673, pl. xciv, figs. 4, 5.

Distribution.—Previously recorded from nearly all areas. It ranges into the South Pacific, but does not appear to have been noticed in the New Zealand region.

Present Occurrence.—Off the Snares; 60 fathoms; one example.

Anomalina coronata, Parker and Jones. (Plate XVII, fig. 10.)

Anomalina coronata, Parker and Jones, 1857, Ann. and Mag. Nat. Hist., ser. 2, vol. xix, p. 294, pl. x, figs. 15, 16. *A. coronata*, P. & J., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 335, pl. lxxix, fig. 2.

Distribution.—It is interesting to note that this species is abundant in the cooler areas of the Northern Hemisphere. It is rare in the tropics, and is again found in the temperate zone of the Southern Hemisphere (Brady). The "Challenger" obtained it off the west coast of New Zealand, but it is not noted in the "Index Faunae Novae-Zelandiae."

Present Occurrence.—Perseverance Harbour, Campbell Islands; 8 fathoms; very rare. Off the Snares; 60 fathoms; very rare. Twenty miles north of Auckland; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; common.

Genus **PULVINULINA**, Parker and Jones, 1862.**Pulvinulina repanda**, Fichtel and Moll sp.

Nautilus repandus, Fichtel and Moll, 1798, Test. Micr., p. 35, pl. iii, figs. a-d. *Pulvinulina repanda*, F. & M. sp., Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 405, pl. xviii, figs. 28-30, 34, 35.

Our specimens are typical and well developed.

Distribution.—Brady says this form is most abundant in tropical and subtropical latitudes; it is, however, quite at home in our first-recorded locality. Haeusler notes this species from the Hauraki Gulf, New Zealand.

Present Occurrence.—Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; frequent. Ten miles north of Enderby Island; 85 fathoms; frequent.

Pulvinulina repanda, F.M. sp., var. **concamerata**, Montagu var.

Serpula concamerata, Montagu, 1808, Test. Brit., Suppl., p. 160 (*vide* Williamson). *Pulvinulina repanda*, F. & M. sp., var. *concamerata*, Mont. var., Brady, 1884, Rep. Chall., vol. ix, p. 685, pl. civ, figs. 19 a-c. *P. concamerata*, Mont. sp., Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 405, pl. xviii, figs. 28-30.

Distribution.—Brady records this variety from the coasts of England, Belgium, and France. Egger obtained it from "Gazelle" dredgings off the west coast of Portugal, off Western Australia, and off west Africa. It is new to the New Zealand area.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

Pulvinulina concentrica, Parker and Jones.

Pulvinulina concentrica (Parker and Jones MS.), Brady, 1864, Trans. Linn. Soc. Lond., vol. xxiv, p. 470, pl. xlvi, fig. 14. *P. concentrica*, P. & J., Brady, 1884, Rep. Chall., vol. ix, p. 686, pl. cv, figs. 1 a-c.

Distribution.—Found at various stations in the North and South Atlantic, and from two stations in the South Pacific (Brady); also from the Malay Archipelago (Millett). The species is new to the New Zealand area.

Present Occurrence.—Off the Snares; 60 fathoms; very rare.

***Pulvinulina canariensis*, d'Orbigny sp.**

Rotalina canariensis, d'Orbigny, 1839, *Foram. Canaries*, p. 130, pl. i, figs. 34–36. *Pulvinulina canariensis*, d'Orbigny sp., Rhumbler, 1900, in Karl Brandt's "Nordisches Plankton," heft 14, p. 16, fig. 10.

Distribution.—More generally diffused in the north and south temperate zones (Brady). Obtained from the New Zealand area by the "Challenger." Also recorded from Great Barrier Island by the writer.

Present Occurrence.—Off the Snares; 60 fathoms; rare.

***Pulvinulina truncatulinoides*, d'Orbigny sp.**

Rotalina truncatulinoides, d'Orbigny, 1839, *Foram. Canaries*, p. 132, pl. ii, figs. 25–27. *Pulvinulina truncatulinoides*, d'Orb. sp., Rhumbler, 1900, in Karl Brandt's "Nordisches Plankton," heft 14, p. 17, fig. 16.

Distribution.—Widely dispersed. Already recorded from the New Zealand area by the "Challenger" (as *P. micheliniana*, d'Orb. sp.). It was not uncommon in the dredgings off Great Barrier Island.

Present Occurrence.—North-east of Bounty Island; 50 fathoms; very rare. Off the Snares; 60 fathoms; frequent. Twenty miles north of Auckland Island; 85 fathoms; rare. Ten miles north of Enderby Island; 85 fathoms; rare.

***Pulvinulina exigua*, Brady.**

Pulvinulina exigua, Brady, 1884, *Rep. Chall.*, vol. ix, p. 696, pl. ciii, figs. 13, 14.

Distribution.—A deep-water form, only occasionally found in moderately shallow water. It has a wide distribution, and has already been recorded from the New Zealand area by the "Challenger."

Present Occurrence.—Off the Snares; 60 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; very rare.

***Pulvinulina schreibersii*, d'Orbigny sp.**

Rotalina schreibersii, d'Orbigny, 1846, *Foram. Foss. Vienne*, p. 154, pl. viii, figs. 4–6. *Pulvinulina schreibersii*, d'Orb. sp., Brady, 1884, *Rep. Chall.*, vol. ix, p. 697, pl. cxv, figs. 1 a–c.

Distribution.—Six out of seven "Challenger" stations were amongst the islands of the South Pacific. Previously obtained from the New Zealand area by the "Challenger," but not noted in the "Index Faunae Novae-Zelandiae"; and also occurring off Great Barrier Island.

Present Occurrence.—Off the Snares; 60 fathoms; very rare; not typical.

Pulvinulina elegans, d'Orbigny sp.

Rotalia (Turbinulina) elegans, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 276, No. 54. *Pulvinulina elegans*, d'Orb. sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 331, pl. lxxv, fig. 1.

A carinate variety also occurs here.

Distribution.—It has been previously recorded from the New Zealand area by the "Challenger."

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; rare.

Genus **ROTALIA**, Lamarck, 1804.**Rotalia soldanii**, d'Orbigny.

Rotalia (Gyroidina) soldanii, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii, p. 278, No. 5; modèle No. 36. *R. soldanii*, d'Orb., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 332, pl. lxxv, fig. 4.

Distribution.—This species has a wide geographical distribution. Brady states that out of sixty localities for this species only six have a depth of less than 300 fathoms. Recorded previously from the New Zealand area by the "Challenger." It was rare in the Great Barrier Island dredgings.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; rare.

Rotalia clathrata; Brady.

R. clathrata, Brady, 1884, Rep. Chall., vol. ix, p. 709, pl. cvii, figs. 8, 9.

Distribution.—Confined to the area between Australia and New Zealand. Recorded previously from the New Zealand area by the "Challenger." It was a rare form in the Great Barrier Island dredging.

Present Occurrence.—Perseverance Harbour, Campbell Islands; 8 fathoms; very rare. North-east of Bounty Island; 50 fathoms; rare. Off the Snares; 60 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; common. Ten miles north of Enderby Island; 85 fathoms; common.

Subfam. **TINOPORINAE**.Genus **GYPSINA**, Carter, 1877.**Gypsina vesicularis**, Parker and Jones sp.

Orbitolina vesicularis, Parker and Jones, 1860, Ann. and Mag. Nat. Hist., ser. 3, vol. vi, p. 31, No. 5. *Gypsina vesicularis*, Parker and Jones, Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 382, pl. xiv, figs. 20–23. *G. vesicularis*, P. & J. sp., Chapman, 1900, Journ. Linn. Soc. Lond., Zool., p. 198, pl. xix, fig. 12.

Our specimens are rather small, but otherwise typical.

Distribution.—This species is new to the New Zealand area as recorded. It is typically a form inhabiting warm latitudes, being frequent in coral sands. With regard to its occurrence in cold-water areas, Dr. Brady has noted it from the Atlantic

seaboard of Great Britain and from the Irish Sea,* but it is absent from the east coast of England and Scotland; this limited distribution in northern areas may be accounted for by the influence of the Gulf Stream on the west British coast. Dr. Egger obtained it from "Gazelle" dredgings in the Mauritius and at Amboyna.

Present Occurrence.—Off the Snares; 60 fathoms; frequent.

Gypsina inhaerens, Schultze sp.

Acervulina inhaerens, Schultze, 1854, Organ. Polythal., p. 68, pl. vi, fig. 12.

Gypsina inhaerens, Schultze sp., Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 336, pl. lxxix, fig. 6

One of our specimens is found encrusting a cylindrical adventitious fragment in a manner very typical of this form. The others are explanate and detached, but once adherent.

Distribution.—New to the New Zealand area. The "Challenger" examples came from two stations, both in the Southern Hemisphere—viz., off East Moncoeur Island, Bass Strait, and off Booby Island, near New Guinea. Mr. Millett obtained it from the Malay Archipelago.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; rare.

Fam. NUMMULINIDAE.

Subfam. POLYSTOMELLINAE.

Genus NONIONINA, d'Orbigny, 1826.

Nonionina depressula, Walker and Jacob sp.

Nautilus depressulus, Walker and Jacob, 1798, "Adams's Essays," Kancher's ed., p. 641, pl. xiv, fig. 33. *Nonionina depressula*, W. & J. sp., Wright, 1900, Geol. Mag., Dec. 4, vol. vii, p. 100, pl. v, fig. 23.

Distribution.—Characteristic of shallow water or estuarine conditions, and generally distributed. Dr. Haeusler records this species from the Hauraki Gulf, New Zealand.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

Nonionina umbilicatula, Montagu sp.

Nautilus umbilicatulus, Montagu, 1803, Test. Brit., p. 191; Suppl., p. 78, pl. xviii, fig. 1. *Nonionina umbilicatula*, Mont. sp., Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 426, pl. xix, figs. 36, 37.

Distribution.—A cosmopolitan species. Previously recorded from the New Zealand area in the "Challenger" series. Also obtained off Great Barrier Island.

Present Occurrence.—Off the Snares; 60 fathoms; rare. Twenty miles north of Auckland Island; 85 fathoms; very common. Ten miles north of Enderby Island; 85 fathoms; frequent.

* "A Synopsis of the British Recent Foraminifera," H. B. Brady, Journ. R. Micr. Soc., ser. 2, vol. vii, 1887, p. 923.

Nonionina scapha, Fichtel and Moll sp.

Nautilus scapha, Fichtel and Moll, 1798, Test. Micr., p. 105, pl. xix, figs. d-f.
Nonionina scapha, F. & M. sp., Flint, 1899, Rep. U.S. Nat. Mus. for
 1897, p. 357, pl. lxxx, fig. 1.

Distribution.—Widely dispersed. Dr. Brady remarks that it does not appear to have been recorded from the Southern Ocean. Haeusler notes it from the Hauraki Gulf.

Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare.

Nonionina boueana, d'Orbigny.

Nonionina boueana, d'Orb., 1846, Foram. Foss. Vienne, p. 108, pl. v, figs. 11, 12. *N. boueana*, d'Orb., Fornasini, 1900, Mem. R. Acad. Sci. Ist. Bologna, ser. 5, vol. viii, p. 400, fig. 49.

Distribution.—Dr. Brady records this species from seven localities, only one of which is in the Southern Hemisphere—off the west coast of Patagonia. This species is new to the New Zealand area.

Present Occurrence.—Perseverance Harbour, Campbell Islands; 8 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; rare.

Genus **POLYSTOMELLA**, Lamarck, 1822.**Polystomella crispa**, Linné sp.

Nautilus crispus, Linné, 1767, Syst. Nat., ed. 12, p. 1162, No. 275. *Polystomella crispa*, Linn. sp., Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 432, pl. xx, figs. 20, 21. *P. crispa*, L. sp., Rhumbler, 1902, Zeitschr. für Allgem. Phys., vol. ii, pt. 2, p. 233, fig. 64.

Distribution.—Widely diffused. Recorded by Haeusler from the Hauraki Gulf, New Zealand.

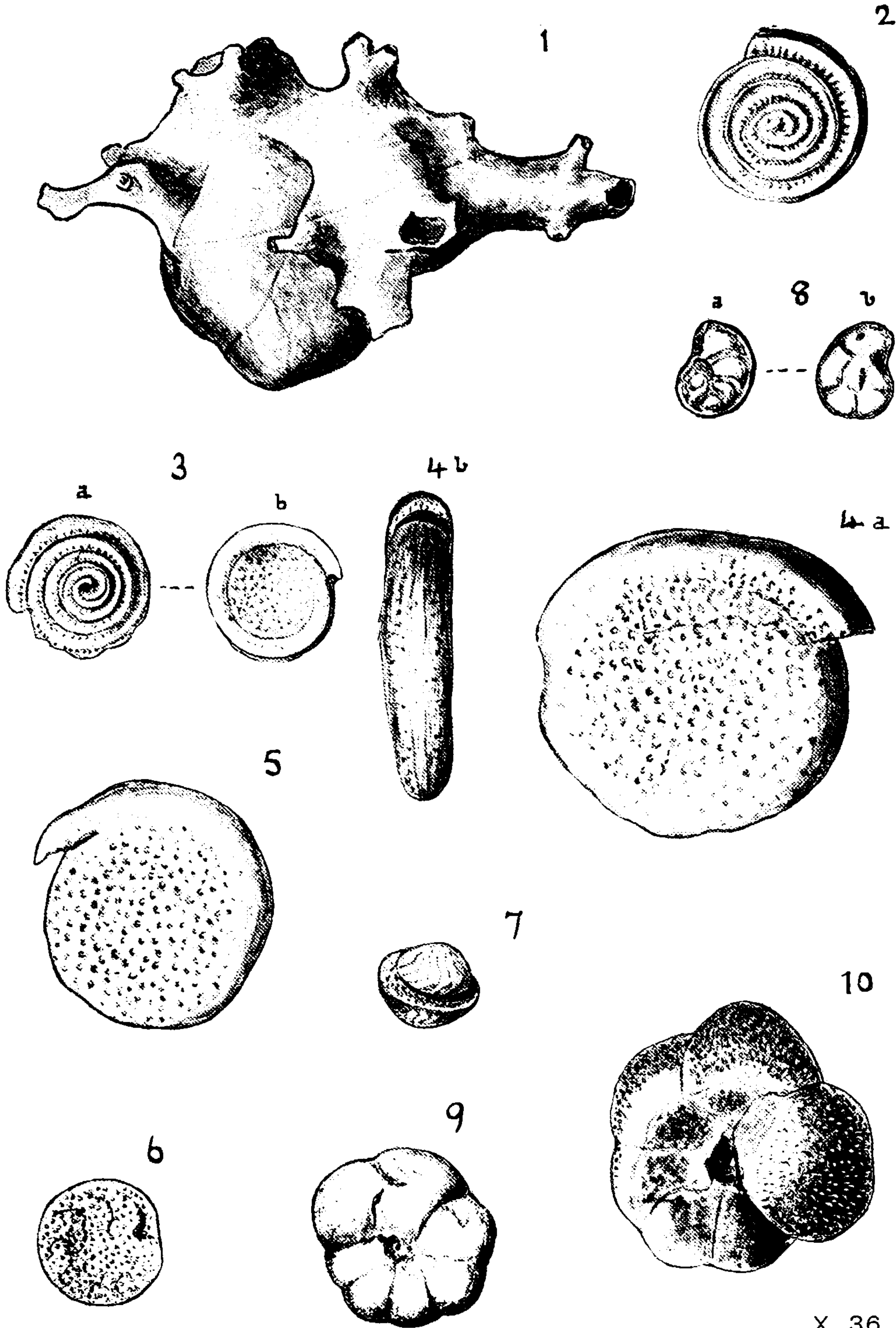
Present Occurrence.—Ten miles north of Enderby Island; 85 fathoms; very rare; typical.

Polystomella macella, Fichtel and Moll sp.

Nautilus macellus, Fichtel and Moll, 1798, Test. Micr., p. 66, pl. x, figs. e-g. *Polystomella macella*, F. & M. sp., Brady, 1884, Rep. Chall., vol. ix, p. 737, pl. cx, figs. 8, 9, 11. *P. macella*, F. & M. sp., Egger, 1893, Abhandl. k. bayer. Akad. Wiss., cl. ii, vol. xviii, p. 432, pl. xx, figs. 22, 23.

Distribution.—A widely diffused species. Egger records it, amongst other places, from Kerguelen Island. Recorded previously from the New Zealand area by Dr. Brady, but not noted from the "Challenger" series in the "Index Faunae Novae-Zealandiae." Also by Haeusler from the Hauraki Gulf.

Present Occurrence.—Perseverance Harbour, Campbell Island; 8 fathoms; very common. Twenty miles north of Auckland Island; 85 fathoms; very rare. Ten miles north of Enderby Island; 85 fathoms; very rare.



X 36.

PLATE XVII.

SUMMARY OF RESULTS.

The dredgings on which the foregoing report is based have proved rich beyond expectations, for they have yielded as many as 168 species and varieties of the *Foraminifera*. No doubt additional species could be found by prolonged searching amongst the finer material.

Four new species and two new varieties are herein described, viz.,—

Miliolina chrysostoma.

Planispirina antarctica.

Lagena lagenoides, Williamson sp., var. *nuda*.

„ *quadrata*, Will. sp., var. *carinata*.

„ *enderbiensis*.

Spirillina novae-zealandiae.

Of forms new to the “Index Faunae Novae-Zealandiae” there are 103. As in the Barrier Island dredgings, the present contain a few species until recently only met in high northern latitudes, such as *Biloculina vespertilio*, *B. pisum*, and *Miliolina angulata*.

The most prolific genus is *Lagena*, with nineteen species and varieties. Of the genus *Spirillina* there was no record in the “Index Faunae Novae-Zealandiae”; but the present material contains as many as eight species and a variety.

Textularia gramen is noteworthy as being amongst the commonest forms, and, further, that it shows a remarkable amount of variation.

Another most interesting species is *Discorbina parisiensis*, which here appears to be normally in the condition of plastogamic union, the two shells being frequently so well matched in size and neatly apposed as to almost pass for a biconvex test of *Amphistegina lessoni*.

LIST OF FORAMINIFERA MENTIONED IN THE FOREGOING REPORT.

[Previous records marked thus: Ch. = “Challenger,” *vide* H. B. Brady and J. Murray; Br. = H. B. Brady; H. = Dr. Haeusler; F.C. = F. Chapman; * = New to New Zealand area.]

H.	<i>Nubecularia lucifuga</i> , DeFrance.
Ch.	<i>Biloculina depressa</i> , d’Orb.
Ch.	„ <i>serrata</i> , Brady.
*	„ <i>sarsi</i> , Schlumb.
Ch.	„ <i>bradii</i> , Schlumb. (Recorded as <i>B. ringens</i> by “Challenger.”)
*	„ „ var. <i>denticulata</i> , Brady.
*	„ <i>vespertilio</i> , Schlumb.
F.C.	„ <i>pisum</i> , Schlumb.
*	„ <i>lucernula</i> , Schwager.
*	„ <i>elongata</i> , d’Orb.
Ch.	„ <i>irregularis</i> , d’Orb.
*	„ <i>globulus</i> , Born. (Included with <i>B. sphaera</i> in Chall. Rep.)
*	<i>Spiroloculina asperula</i> , Karrer.

F.C.	<i>Miliolina insignis</i> , Brady.
Ch., H., F.C.	„ <i>circularis</i> , Born. sp.
*	„ „ var. <i>sublineata</i> , Brady.
*	„ <i>subrotunda</i> , Mont. sp.
Ch., H., F.C.	„ <i>seminulum</i> , L. sp.
Ch., H.	„ <i>oblonga</i> , Mont. sp.
*	„ <i>trigonula</i> , Lam. sp.
Ch.	„ <i>tricarinata</i> , d'Orb. sp.
*	„ <i>vulgaris</i> , d'Orb. sp.
*	„ <i>angulata</i> , Will.
*	„ <i>polygona</i> , d'Orb. sp.
Ch.	„ <i>venusta</i> , Karrer sp.
*	„ <i>ferrussacii</i> , d'Orb. sp.
*	„ <i>chrysostoma</i> , sp. nov.
Ch.	<i>Sigmoilina schlumbergeri</i> , A. Silvestri. (Recorded as <i>Planispirina celata</i> , Brady non Costa sp.)
*	„ <i>celata</i> , Costa sp.
*	<i>Articulina funalis</i> , Brady.
*	<i>Planispirina exigua</i> , Brady.
Ch., F.C.	„ <i>sphaera</i> , d'Orb.
*	„ <i>bucculenta</i> , Brady.
*	„ „ var. <i>placentiformis</i> , Brady var.
*	„ <i>antarctica</i> , sp. nov.
*	<i>Cornuspira involvens</i> , Rss. sp.
Ch.	<i>Hyperammia ramosa</i> , Brady.
*	<i>Rhizammia indivisa</i> , Brady.
Ch., H., F.C.	<i>Reophax scorpiurus</i> , Montf.
Ch.	„ <i>nodulosa</i> , Brady.
H., F.C.	<i>Haplophragmium canariense</i> , d'Orb. sp.
Ch.	<i>Textularia agglutinans</i> , d'Orb.
Ch., F.C.	„ <i>gibbosa</i> , var. <i>tuberosa</i> , d'Orb. (Recorded as <i>T. aspera</i> , Brady.)
Ch.	„ <i>concava</i> , Karrer sp.
F.C.	„ <i>gramen</i> , d'Orb.
*	„ „ var. <i>jugosa</i> , Jones.
*	„ <i>candeina</i> , d'Orb.
Ch., F.C.	<i>Spiroplecta sagittula</i> , Defr. sp.
*	<i>Bulimina elegantissima</i> , d'Orb., var. <i>apiculata</i> , Chapm.
*	„ <i>subteres</i> , Brady.
F.C.	„ <i>marginata</i> , d'Orb.
*	„ <i>contraria</i> , Rss.
F.C.	<i>Bolivina robusta</i> , Brady.
*	„ <i>pygmaea</i> , Brady.
F.C.	<i>Cassidulina laevigata</i> , d'Orb.
*	„ <i>oblonga</i> , Rss.
Ch., F.C.	„ <i>subglobosa</i> , Brady.
Ch.	<i>Ehrenbergina serrata</i> , Rss.

Ch.	<i>Lagena globosa</i> , Mont. sp.
Ch.	„ <i>gracilis</i> , Will.
F.C.	„ <i>sulcata</i> , W. & J. sp.
*	„ <i>lineata</i> , Will. sp.
Ch.	„ <i>acuticosta</i> , Rss.
Ch., F.C.	„ <i>hexagona</i> , Will. sp.
Ch.	„ <i>squamosa</i> , Mont. sp.
*	„ <i>montagui</i> , Silv.
Ch.	„ <i>marginata</i> , W. & B.
Ch.	„ „ var. <i>semimarginata</i> , Rss.
*	„ <i>schlichti</i> , Silv. sp.
*	„ <i>biancae</i> , Seguenza sp.
*	„ <i>orbignyana</i> , Seg. sp.
*	„ „ var. <i>clathrata</i> , Brady.
Ch.	„ <i>fasciata</i> , Egger sp. (Recorded as <i>L. quadricostulata</i> , Rss.)
*	„ <i>lagenoides</i> , Will. sp., var. <i>nuda</i> , nov.
*	„ <i>quadrata</i> , Will. sp.
*	„ „ var. <i>carinata</i> , nov.
*	„ <i>enderbiensis</i> , sp. nov.
*	<i>Nodosaria subradicula</i> , Schwager.
Ch.	„ <i>oligostegia</i> , Rss. (Recorded as <i>N. simplex</i> , Silv.)
F.C.	„ (<i>Dentalina</i>) <i>roemeri</i> , Neug. sp.
Ch.	„ „ <i>communis</i> , d'Orb.
F.C.	„ „ <i>consobrina</i> , d'Orb. sp.
F.C.	„ „ „ var. <i>emaciata</i> , Rss.
F.C.	„ „ <i>pyrula</i> , d'Orb.
Ch., F.C.	„ „ <i>obliqua</i> , L. sp.
F.C.	„ „ „ var. <i>vertebralis</i> , Batsch var.
*	<i>Marginulina costata</i> , Batsch sp.
*	<i>Vaginulina legumen</i> , L. sp.
F.C.	<i>Cristellaria schloenbachi</i> , Rss.
*	„ <i>crepidula</i> , F. & M. sp.
Ch., F.C.	„ <i>tricarinella</i> , Rss.
*	„ <i>lata</i> , Cornuel sp.
Ch.	„ <i>compressa</i> , d'Orb.
*	„ <i>variabilis</i> , Rss.
F.C.	„ <i>articulata</i> , Rss. sp.
*	„ <i>gibba</i> , d'Orb.
Ch., F.C.	„ <i>reniformis</i> , d'Orb.
Ch., F.C.	„ <i>cultrata</i> , Montf. sp.
Ch., F.C.	„ <i>rotulata</i> , Lam. sp.
*	„ <i>vortex</i> , F. & M. sp.
Ch., F.C.	„ <i>orbicularis</i> , d'Orb. sp.
*	<i>Polymorphina lactea</i> , W. & J. sp.
*	„ „ var. <i>diffusa</i> , J. & C.
*	„ „ var. <i>racemosa</i> , J. & C.
*	„ <i>gibba</i> , d'Orb.

*	<i>Polymorphina gibba</i> d'Orb., var. <i>racemosa</i> , J. & C.
*	„ <i>communis</i> , d'Orb.
*	„ <i>compressa</i> , d'Orb.
*	„ <i>oblonga</i> , d'Orb.
*	„ <i>elegantissima</i> , P. & J.
Ch.	<i>Uvigerina angulosa</i> , Will.
Ch., F.C.	<i>Globigerina bulloides</i> , d'Orb.
Ch., F.C.	„ <i>triloba</i> , Rss.
*	„ <i>duertrei</i> , d'Orb.
Ch., F.C.	„ <i>inflata</i> , d'Orb.
Ch., F.C.	„ <i>aequilateralis</i> , Brady.
Ch., F.C.	<i>Orbulina universa</i> , d'Orb.
Ch., F.C.	<i>Sphaeroidina bulloides</i> , d'Orb.
*	<i>Candeina nitida</i> , d'Orb.
*	<i>Spirillina vivipara</i> , Ehr.
*	„ <i>obconica</i> , Brady.
*	„ <i>novae-zealandiae</i> , sp. nov.
*	„ <i>inaequalis</i> , Brady.
*	„ <i>decorata</i> , Brady.
*	„ <i>spinigera</i> , Chapman.
*	„ <i>limbata</i> , Brady.
*	„ „ var. <i>denticulata</i> , Brady.
*	„ <i>denticulo-granulata</i> , Chapman.
H.	<i>Patellina corrugata</i> , Will.
H.	<i>Discorbina turbo</i> , d'Orb. sp.
H.	„ <i>globularis</i> , d'Orb. sp.
H.	„ <i>rosacea</i> , d'Orb. sp.
*	„ <i>patelliformis</i> , Brady.
*	„ <i>bertheloti</i> , d'Orb. sp.
*	„ „ var. <i>baconica</i> , Hantken.
*	„ <i>araucana</i> , d'Orb. sp.
*	„ <i>parisiensis</i> , d'Orb. sp.
*	„ <i>allomorphinoides</i> , Rss. sp.
*	„ <i>rarescens</i> , Brady.
*	„ <i>concava</i> , P. & J.
*	<i>Truncatulina refulgens</i> , Montf. sp.
Ch., F.C.	„ <i>lobatula</i> , W. & J. sp.
F.C.	„ <i>variabilis</i> , d'Orb.
Ch., F.C.	„ <i>tenuimargo</i> , Brady.
Ch., F.C.	„ <i>wuellerstorfi</i> , Schwager sp.
F.C.	„ <i>ungeriana</i> , d'Orb. sp.†
F.C.	„ <i>reticulata</i> , Cz. sp.
F.C.	„ <i>haidingeri</i> , d'Orb. sp.
*	<i>Anomalina grosserugosa</i> , Gümbel sp.
*	„ <i>coronata</i> , P. & J.
H.	<i>Pulvinulina repanda</i> , F. & M. sp.
*	„ „ var. <i>concamerata</i> , Mont. var.

*	<i>Pulvinulina concentrica</i> , P. & J.
Ch., F.C.	„ <i>canariensis</i> , d'Orb. sp.
Ch., F.C.	„ <i>truncatulinoides</i> , d'Orb. sp. (Recorded as <i>T. micheliniana</i> .)
Ch.	„ <i>exigua</i> , Brady.
Ch., F.C.	„ <i>schreibersii</i> , d'Orb. sp.
Ch.	„ <i>elegans</i> , d'Orb. sp.
Ch., F.C.	<i>Rotalia soldanii</i> , d'Orb.
Ch., F.C.	„ <i>clathrata</i> , Brady.
*	<i>Gypsina vesicularis</i> , P. & J. sp.
*	„ <i>inhaerens</i> , Schultze sp.
H.	<i>Nonionina depressula</i> , W. & J. sp.
Ch., F.C.	„ <i>umbilicatula</i> , Mont. sp.
H.	„ <i>scapha</i> , F. & M. sp.
*	„ <i>boueana</i> , d'Orb.
H.	<i>Polystomella crispa</i> , L. sp.
H.	„ <i>macella</i> , F. & M. sp.

EXPLANATION OF PLATES XIII-XVII.

[All figures magnified 36 diameters.]

PLATE XIII.

- Fig. 1. *Biloculina bradii*, Schlumberger. Cornute variety. North of Enderby Island.
 Fig. 2. *B. bradii*, Schlumb., var. *denticulata*, Brady. Off the Snares.
 Fig. 3. *B. sarsi*, Schlumberger. Aberrant form. North of Auckland Island.
 Fig. 4. *B. vespertilio*, Schlumb.: *a*, front aspect; *b*, side aspect. Off the Snares
 Fig. 5. *Miliolina angulata*, Williamson. Off the Snares.
 Fig. 6. *M. polygona*, d'Orbigny sp. North of Enderby Island.
 Fig. 7. *M. circularis*, Bornemann sp., var. *sublineata*, Brady. North of Enderby Island.
 Fig. 8. *M. chrysostoma*, sp. nov. Biloculine form. North of Enderby Island.
 Fig. 9. *M. chrysostoma*, sp. nov.: *a*, side view of a biloculine form; *b*, front view. North of Enderby Island.
 Fig. 10. *M. chrysostoma*, sp. nov. Triloculine form. North of Enderby Island.

PLATE XIV.

- Fig. 1. *Miliolina chrysostoma*, sp. nov. Biloculine variety with external chamber partly removed, showing opposed aperture. North of Enderby Island.
 Fig. 2. *Planispirina bucculenta*, Brady sp. North of Enderby Island.
 Fig. 3. *Articulina funalis*, Brady. North of Auckland Island.
 Fig. 4. *Miliolina chrysostoma*, sp. nov. Vertical section of test, showing internal arrangement of chambers and characteristic form of aperture. North of Enderby Island.
 Fig. 5. *Planispirina antarctica*, sp. nov.: *a*, front aspect; *b*, oral aspect. North of Enderby Island.
 Fig. 6. *Haplophragmium canariense*, d'Orbigny sp. Off the Snares.
 Fig. 7. *Textularia gibbosa*, var. *tuberosa*, d'Orb. North of Auckland Island.
 Fig. 8. *T. gramen*, d'Orb. Senile form. North of Enderby Island.
 Fig. 9. *T. gramen*, var. *jugosa*, Jones. Off the Snares.
 Fig. 10. *Bulimina subteres*, Brady. North of Enderby Island.
 Fig. 11. *Bolivina pygmaea*, Brady. North of Auckland Island.

PLATE XV.

- Fig. 1. *Cassidulina laevigata*, d'Orbigny. Dentate variety. North of Enderby Island.
 Fig. 2. *Ehrenbergina serrata*, Reuss. North-east of Bounty Island.
 Fig. 3. *Lagena lineata*, Williamson sp. Off the Snares.
 Fig. 4. *L. sulcata*, Walker and Jacob sp. North of Auckland Island.
 Fig. 5. *L. squamosa*, Montagu sp. North of Enderby Island.
 Fig. 6. *L. marginata*, Walker and Boys. Off the Snares.
 Fig. 7. *L. schlichti*, A. Silvestri: *a*, front aspect; *b*, oral aspect. Off the Snares.
 Fig. 8. *L. biancae*, Seguenza sp.: *a*, front aspect; *b*, oral aspect. North of Enderby Island.
 Fig. 9. *L. lagenoides*, Williamson sp., var. *nuda*, var. nov. North of Enderby Island.
 Fig. 10. *L. orbignyana*, Seguenza sp. Off the Snares.
 Fig. 11. *L. orbignyana*, Seg. sp., var. *clathrata*, Brady. North of Auckland Island.
 Fig. 12. *L. quadrata*, Williamson sp., var. *carinata*, var. nov. Off the Snares.

PLATE XVI.

- Fig. 1. *Lagena enderbiensis*, sp. nov.: *a*, front aspect; *b*, oral aspect. North of Enderby Island.
 Fig. 2. *Nodosaria subradicula*, Schwager. North of Enderby Island.
 Fig. 3. *Cristellaria tricarinella*, Reuss. North of Enderby Island.
 Fig. 4. *C. lata*, Cornuel sp. North of Auckland Island.
 Fig. 5. *C. compressa*, d'Orbigny. Off the Snares.
 Fig. 6. *C. cultrata*, Montfort sp. Off the Snares.
 Fig. 7. *Polymorphina lactea*, Walker and Jacob sp., var. *diffusa*, Jones and Chapman. North-east of Bounty Island.
 Fig. 8. *P. lactea*, W. & J. sp., var. *racemosa*, Jones and Chapman. North-east of Bounty Island.

PLATE XVII.

- Fig. 1. *Polymorphina gibba*, d'Orbigny, var. *racemosa*, Jones and Chapman. Off the Snares.
 Fig. 2. *Spirillina limbata*, var. *denticulata*, Brady. Off the Snares.
 Fig. 3. *S. denticulo-granulata*, Chapman: *a*, superior aspect; *b*, inferior, granulate face. Off the Snares.
 Fig. 4. *S. novae-zealandiae*, sp. nov.: *a*, lateral aspect; *b*, peripheral and oral aspect. Off the Snares.
 Fig. 5. *S. novae-zealandiae*, sp. nov.: lateral aspect of another specimen. Off the Snares.
 Fig. 6. *Discorbina parisiensis*, d'Orb. sp.: inferior aspect. Off the Snares.
 Fig. 7. *D. parisiensis*, d'Orb. sp. Double specimen. Off the Snares.
 Fig. 8. *D. biconcava*, Parker and Jones: *a*, superior aspect; *b*, inferior aspect. Off the Snares.
 Fig. 9. *Anomalina grosserugosa*, Gumbel sp. Off the Snares.
 Fig. 10. *A. coronata*, Parker and Jones: inferior aspect. North of Auckland Island.

THE
SUBANTARCTIC ISLANDS
OF
NEW ZEALAND.

REPORTS
ON THE
GEO-PHYSICS, GEOLOGY, ZOOLOGY, AND BOTANY OF THE
ISLANDS LYING TO THE SOUTH OF NEW ZEALAND,
BASED MAINLY ON
OBSERVATIONS AND COLLECTIONS MADE DURING AN EXPEDITION IN THE GOVERNMENT
STEAMER "HINEMOA" (CAPTAIN J. BOLLONS) IN NOVEMBER, 1907.

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